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ABSTRACT

A study was conducted to improve the link between basic skill instruction and entry into various vocational training programs. Data were collected from the following sources: current professional literature; developers and publishers of adult basic education (ABE) instructional materials; consultations with experts in the fields of adult literacy, ABE, and vocational education; national and regional conferences on adult and vocational education; and field visits to numerous educational institutions and agencies that provide ABE and vocational training. A considerable quantity and variety of commercial and noncommercial ABE and English as a second language (ESL) instructional materials were found to be available; however, very few materials for ABE in the vocational education context were found. The 132 basic skills identified by the study and validated by a panel of experts is divided among five areas: reading, mathematics, writing, listening and speaking. It was concluded that basic skills instruction intended to prepare adults for entry into vocational programs should be individualized, use performance-based processes, be geared toward student success, use pre- and posttests, be relevant, review and reinforce the skills that are taught, and address individual student learning styles. Given the range of learning needs that ABE and ESL students present and the limited funds available for purchasing materials, it was concluded that materials selected for purchase should be practical, methodologically sound, relevant to vocational training, well written, well designed, and people oriented. (A section containing recommendations geared specifically toward practitioners, researchers, and policymakers concludes the guide.) (MN)

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ADULT LITERACY: PROGRAMS AND PRACTICES

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FOREWORD

Approximately 26 million American adults are functionally illiterate. A substantial number of them want vocational training, but are unable to participate successfully in programs due to deficiencies in reading, math, and language arts skills. Vocational educators and adult basic skill educators are continuously seeking strategies and instructional materials to strengthen the link between basic skill training and vocational training.

This document will assist vocational educators, adult basic education coordinators, and adult vocational training administrators in strengthening this link. It provides numerous strategies and methods for helping adults with vocationally related basic skills organized by the three key phases of remediation: the identification of prerequisite basic skills for vocational training, the assessment of basic skills, and instruction of basic skills. A companion volume, *Adult Literacy Skills: Learning Resources*, contains over 600 entries of adult basic skill instructional materials and will be found especially helpful.

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Robert E. Taylor
Executive Director
National Center for Research
in Vocational Education

EXECUTIVE SUMMARY

Millions of adults are unable to participate successfully in vocational training due to deficiencies in basic skills such as reading, math, and language arts. This study was conducted to improve the link between basic skill instruction and entry into various vocational training programs.

The findings of the study were based upon information from five major sources:

1. Current professional literature
2. Developers and publishers of adult basic education instructional materials
3. Consultations with experts in the fields of adult literacy, basic education, and vocational education
4. National and regional conferences on adult and vocational education
5. Field visits to numerous educational institutions and agencies that provide adult basic education and vocational training

The findings of the report are divided into three major sections to reflect the three major phases of the process of basic skill remediation for entry into vocational training. These phases are—

1. specifying basic skill prerequisites for vocational training,
2. assessing students' basic skills, and
3. providing remedial instruction.

Specifying Basic Skill Prerequisites for Vocational Training

The identification of the basic skills required for adults to enter vocational training involved three steps: (1) the specification of criteria for the identification of basic skills, (2) the development of a pilot list of basic skills, and (3) the finalization of the list through a panel of experts. The final list represents a synthesis of existing lists drawn from the literature. The list should be viewed as a generic inventory of basic skills that vary as to their applicability by level and skill area for entry into differing vocational programs. In other words, the list should not be perceived as a mandatory set of basic skills for every vocational program. The generic list consists of a total of 132 basic skills for reading, math, writing, listening, and speaking.

Assessing Students' Basic Skills

Based upon several recent reviews of basic skills assessment, nine ideal criteria were specified to select assessment instruments especially directed toward vocational training. The criteria deal with such considerations as measuring low to high levels of basic skills, multiple basic skills, criterion-referenced tests, diagnostic analysis, test administration, and interpretation.

Additionally, a comprehensive list of the most commonly used tests of basic skills is included. The list is organized into eight categories according to measurement characteristics, that is, competency level, intended population, and/or psychometric properties.

Providing Remedial Instruction

In the interest of helping adults acquire basic skills for entry into vocational training programs, the project identified and reviewed existing instructional strategies and materials. The review was based on over 600 instructional materials described in publisher catalogs as well as information from schools and consultants. The findings of the review were organized into four major parts as follows.

General Characteristics of Adult Basic Skill and ESL Instructional Materials

Cost range of materials are from under $5 for softcover student booklets up to thousands of dollars for computer and audiovisual equipment.

The *availability* of commercial materials is great in all adult basic skill areas except speaking and listening. Commercial print materials far exceed any other type for both adult basic skills and ESL. Also, a number of noncommercial materials exist for adult basic education (ABE) and ESL—frequently these are teacher guides rather than student materials.

Very few materials designed for ABE in the *vocational education context* are in existence. It is possible that publishers believe that it is impractical to focus a whole text on one occupation when a more general text would capture all students' interest.

Kinds of Instructional Materials Used in Vocational Institutions to Teach ABE and ESL

Based on visits and correspondence with vocational institutions, there is considerable variety and no universal preference for the materials used at different vocational institutions for ABE and ESL. For any given institution, usually there is one core text for a basic skill area or ESL supplemented by other texts and materials to meet specific student needs. Frequently, texts, manuals, charts, and tables from specific vocational courses are used to teach or practice a basic skill. In addition to a predominant reliance upon commercial print materials, it is fairly common to use teacher-made materials. Audiovisual and computer packages are also being used. Few institutions rely solely on print materials.

Strategies Used to Teach ABE and ESL in Vocational Institutions

A variety of teaching strategies were found. The more common strategies were—

- **individualize** instruction for the student,
- **use performance-based processes** to establish competency objectives for the student,
- **give pre- and posttests** of the student's entry and exit levels,
- **gear for success** so that the student will develop confidence and not be discouraged or threatened by failure,
- **be relevant** to adult needs and interests,
- **review and reinforce** the skills that have been acquired to generate confidence and a sense of progress, and
- **address individual student learning styles** to optimize learning.

Selection Criteria

Given the range of learning needs that ABE and ESL students pose and limited funds for purchasing materials, selection criteria are an important consideration. The report outlined numerous criteria suggested by the literature and ABE and ESL program coordinators. A summary of these criteria suggested they could be grouped into six categories: (1) practical, (2) methodologically sound, (3) relevant to vocational training, (4) well written, (5) well designed, and (6) people oriented.

Case Studies: Three Illustrations of Linkage

In order to provide a real-world view of how vocational training institutions link basic skill instruction to adult vocational training, three institutions were selected as case studies. The institutions represented contrasting settings, that is, a joint area vocational school, a community college, and an urban adult skill center.

A common format was used to obtain data from each institution. The data focused on the three phases of the process of basic skill remediation for entry into vocational training described earlier. The case studies provided useful information for designing linkages between adult basic education and vocational training. In that they reflect different settings, populations, and strategies, they are especially useful to program planners in portraying alternative models for linkages.

Conclusions and Recommendations

The report outlines a series of conclusions expressed as problems, followed by recommendations for practice, research, and policy to strengthen the link between basic skills instruction and vocational training. The conclusions and recommendations represent a synthesis of information

from the project's panel of experts, the professional literature, field visits, conferences, project reports, correspondence from the field, and publishers of instructional materials, as well as observations of project staff. A sampling of the conclusions and recommendations are listed here.

For Practitioners

- **Problem**—The current program structure of adult basic education (ABE) inhibits responsiveness to trends in modifying instructional design toward job-related curriculum.

- **Recommendations**—Local education agencies should—

  — Provide staff development and inservice teacher training to foster linkage through the collaborative development of assessment and instruction that integrates basic skills and vocational training.

  — Reward ABE for basic skill competencies attained by students.

  — Examine alternative ABE delivery methods.

  — Stress the relevance of basic skills as part of career counseling for adults as they consider options.

- **Problem**—The ABE population has been motivated to obtain GED high school equivalency diplomas without necessarily recognizing other goals such as the acquisition of functional competencies for work and daily living.

- **Recommendations**

  — Focus ABE to generic adult education problems in which the basics, developmental skills, and GED can be taught in a larger context (goal-oriented adult learning).

  — Focus public attention on adult literacy and functional competencies; GED is only one route to competence.

  — Publicize the need for functional competencies in preparation for vocational training and work.

For Researchers

- **Problem**—There is no comprehensive research agenda for the studying the relationship of adult basic education and vocational education. The following are suggested parameters of the research agenda.

- **Recommendations**

  — Conduct systematic research of the basic skills that are necessary for life skills and occupational needs for ABE populations.

Scope and social implications of the basic skill problem.

  — Determine the levels of basic skills in the country that currently exist.

  — Identify the social and economic needs of the ABE populations.

Research on the learner.

- Develop principles and theories that are unique to ABE populations. For example, it is unclear as to how low a basic skill level it is feasible and desirable to integrate a vocational education context with basic skill instruction.

Research on the delivery system.

- Identify and assess alternative delivery systems to determine promising practices.

Research on assessment.

- Increase the diagnostic information provided by basic skill assessment instruments so that the information guides basic skill instruction.
- Develop strategies to improve basic skill assessment through the collaboration of vocational counselors, basic skill and vocational teachers.

Research on instructional materials.

- Develop basic skill instructional materials that are relevant to the context of vocational training in order to foster meaningful transfer of learning.

For Policymakers

- **Problem**—There are weaknesses in regard to the current federal and state policies for formulating criteria and allocation of funds for illiterate adults who need vocational training.
- **Recommendations**—Federal and state policy for funding should accomplish the following:
  - Use performance, for example, competency attainment, as the criterion for funding adult training programs.
  - Define more clearly what is meant by "those most in need" (Federal Adult Education Act) and fund on these criteria.
  - Aim programs at those "most in need." (Eliminate secondary funds in ABE and concentrate efforts on "most in need." The result would be more expensive ABE and fewer numbers, but a better focus for monies.)
  - Have each state develop criteria for funding that include how goals and programs will prepare functionally illiterate adults for job training.
  - In addition, to public schools, encourage more diverse groups to offer ABE.
  - Federal and state agencies should develop some system for defining "dire need" cases to support the delivery of ABE and vocational education training to those who should be provided cost of living subsidies.

CHAPTER 1

INTRODUCTION

It is estimated that there are currently more than 26 million functionally illiterate American adults and that 2.3 million join the pool annually. The annual increase is due to the influx of immigrants, refugees, and high school dropouts and "push-outs" (Bell 1983). Functional literacy is the ability to read, write, communicate orally, and compute at a level that enables one to cope with daily living situations such as health and recreation activities, transportation, shopping, working, and handling legal matters.

The following listing presents situations illustrating the frustrations of being illiterate:

- Parents who are unable to help their children with their homework
- A husband who cannot read a telephone directory to obtain emergency assistance for his ailing wife
- A mother who is unable to write a letter to her son in another city
- An unemployed breadwinner who cannot complete a job application form
- A factory worker who cannot read safety signs
- Refugees who cannot read food and drug product labels
- A new employee who is late for work because he cannot read a bus schedule
- The laid-off worker who is unable to enter a job-training program due to poor math skills

The magnitude of the problem prompted President Reagan to request a National Functional Literacy Initiative through the U.S. Department of Education in 1983. This initiative is designed to increase national attention on the promotion of adult literacy and to enhance existing literacy programs, while utilizing the department's expertise in coordinating literacy efforts nationwide (Bell 1983).

Although illiteracy is a pervasive handicap in all areas of one's life, perhaps it is most pronounced as it pertains to employment. Deficiencies in basic skills such as reading, writing, and math are obstacles in preparing for employment, seeking and retaining employment, and advancing in the job. Dr. Robert M. Worthington (1983), Assistant Secretary for the Office of Vocational and Adult Education, U.S. Department of Education, in a speech at the Assault on Illiteracy Conference describes the significance of illiteracy and unemployment.

> Functional illiteracy affects us all—men, women, blacks, whites—whether we live in the city, the suburbs, or in the country.

> Let us consider some of the effects of functional illiteracy on our society. We might begin with unemployment. Of the nation's 9 million unemployed, a large percentage lack the basic skills of communication, personal relations, motivation, self-confidence, reading, and computing that would enable them to find a job or get a better job in this high-tech age. This is a particular problem for the black community where about 44 percent of the youths are functionally illiterate. Unemployment among black youth is a little less than 50 percent. Labor projections suggest that the number of unskilled and semi-skilled jobs will shrink in the next few years as computers are used to a greater and greater extent in factories and offices. Certainly all persons unemployed do not lack an adequate education—but it is true that those with lower educational levels are the last to be hired and the first to be fired. (p. 2)

The importance of basic skills for employment and employment training was also stressed by a national survey of industry, school systems, and unions conducted by the Center for Public Resources (Henry and Raymond 1982). They summarize their conclusions as follows:

- There is a serious problem of basic skills deficiencies among secondary school graduates and nongraduates entering the work force, from the perspective of business.
- Those deficiencies are pervasive across job categories, types of skills, and types of companies.
- The deficiencies affect not only the performance of entry-level positions, but also the possibilities for job advancement.
- A considerable miscommunication exists between business and school systems regarding the quality of academic skills required on the job, and the seriousness of the deficiencies which exist.
- Corporations do a considerable amount of "curative" remedial training, **but**
- There are relatively few specific precedents for preventive cooperation to address the basic academic skills problem directly. Solutions and efforts are normally tangential aspects of vocational, career, or counseling programs. (pp. 48-49)

In addition to observing the severity of basic skill deficiencies in the work setting, the problem is also acute for adults who are seeking vocational training. Adults have available to them a wide range of vocational training options through public and proprietary institutions, but many cannot benefit from them because they lack the basic skills to deal with the curriculum. Due to the heterogeneity of the adult population, the degree of skill deficiency covers the entire spectrum—from zero-level illiterates to high school graduates whose skills are dated.

Although adult basic education courses have made substantial progress in reducing functional illiteracy, typically they have not been geared toward teaching the specific skills needed for vocational training. Datta's (1982) comprehensive review of employment-related basic skills indicates that the types of skills needed for vocational training and employment are not always the same as those for further education. For example, she cites studies by Sticht (1980) and Mikulecky (1981) who found that the content of reading in vocational training and employment was more frequently "reading to assess" and "reading to do" (i.e., looking up information that can be applied and then forgotten such as using tables and figures, finding facts, and following directions); whereas, reading for further education or to retain information for later use involves "reading to learn." However,

this generalization might be too strong for all vocational training. A former director of vocational education for a large city estimated that at least one-third of vocational training involves reading to learn and retain.

Although there is a growing concern for linking basic skill instruction to adult vocational training, the link is unsystematic and sporadic. One of the few surveys to examine the linkage was conducted in the Appalachian states. Borei (1981) found that of all the adult literacy programs operating in the Appalachian states, only 11.4 percent were linked with vocational education.

Why isn't there a stronger link? There appears to be several reasons for the lack of a stronger link between basic skill instruction and vocational training. First, most adults seek basic skills that help them acquire high school diplomas and/or learn to cope with daily living activities. Little attention is given to basic skills needed for vocational training. Second, there is limited communication between adult basic education and vocational education for achieving cooperative activities. Third, quite often the two programs are physically separated, making travel impractical for the student in need of concurrent instruction from both programs. Fourth, there is a lack of clarity as to the procedures for linking the programs. Fifth, many programs do not have sufficient resources (i.e., teachers) and appropriate instructional materials for effective linkage.

To explicate the linkage further, figure 1 depicts the three phases in the process of basic skill remediation for entry into vocational training. For each of the three phases, key issues for accomplishing this process are identified. For example, phase 1, Specifying basic skill prerequisites for vocational training, raises the issue—What methods can be used for specifying prerequisites? Phase 2, Assessing students' basic skills—Do assessment techniques provide diagnostic information to guide remedial instruction? Phase 3, providing remedial instruction—Who provides remedial instruction?

It is evident that if we are going to strengthen the link between basic skill instruction and vocational training, a number of issues will need to be examined and guidelines will need to be developed to provide direction for better programming.

Purpose of the Study

The purpose of this project was to examine and strengthen the link between basic skill instruction and adult vocational training by examining the above issues through the following objectives:

1. To summarize the adult literacy skills (basic skills) that are required for adults to enter vocational training

2. To identify existing instructional materials for teaching adults the necessary literacy skills for entry into vocational training

3. To disseminate information about the project

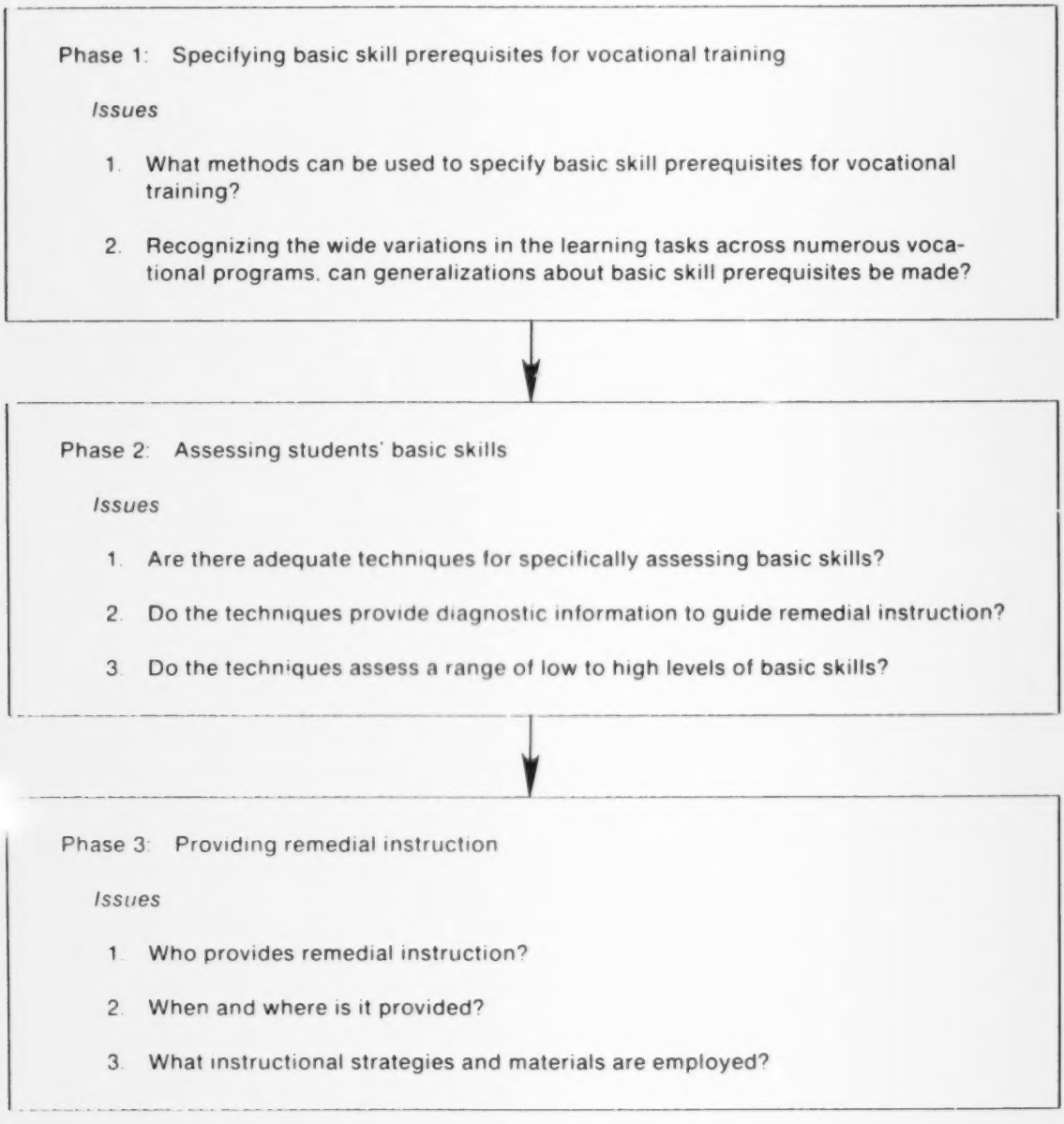
Phase 1: Specifying basic skill prerequisites for vocational training
Issues
1. What methods can be used to specify basic skill prerequisites for vocational training?
2. Recognizing the wide variations in the learning tasks across numerous vocational programs, can generalizations about basic skill prerequisites be made?
Phase 2: Assessing students' basic skills
Issues
1. Are there adequate techniques for specifically assessing basic skills?
2. Do the techniques provide diagnostic information to guide remedial instruction?
3. Do the techniques assess a range of low to high levels of basic skills?
Phase 3: Providing remedial instruction
Issues
1. Who provides remedial instruction?
2. When and where is it provided?
3. What instructional strategies and materials are employed?

Figure 1. The process of basic skill remediation for entry into vocational training

Organization of This Document

Chapter 2 describes the procedures for the study (i.e., how information was acquired, screened, reviewed, and selected to achieve the objectives). Chapter 3 reviews the findings of the project according to the three phases of the process of basic skill remediation for adult vocational training. Included are a generic list of basic skills required for entry into vocational training, an assessment of basic skills, and a discussion of basic skill instruction. Chapter 4 summarizes the findings regarding linkage of adult basic skills and vocational education found in three case studies. Chapter 5 outlines conclusions and makes recommendations.

CHAPTER 2

PROCEDURES

This chapter describes the procedures that were used to identify and review relevant studies and materials for achieving the project objectives, (i.e., the development of a generic list of basic skills required for adults to enter vocational training and the identification of existing instructional materials for teaching adults the necessary basic skills). Additionally, mechanisms for disseminating information about the project are cited.

Definitions

In order to delimit the scope of the project in terms of the focus of literacy skills and the adult population, the following definitions are consistent with the project's objectives.

- **Literacy Skills** are those basic skills that will enable adult students to begin to learn and perform tasks in the training environment and thus increase their likelihood of benefiting from the educational and training experience. These basic skills also have been referred to as prevocational skills, vocationally related basic skills, and adult basic skills; all these terms are used interchangeably in this document.

- **Linkage** is the collaboration between adult basic educators and vocational educators to provide basic skills instruction with the vocational perspective necessary to enable adults to perform the learning tasks in vocational training.

- **Adult Population** refers to educable adults who are unemployed, unskilled, or possess outdated skills and are seeking secondary or postsecondary vocational training or retraining.

Resources for Obtaining Information

Five primary resources were used to obtain information about the relationship of basic skills to adult vocational training. They are (1) a computerized literature search, (2) a survey of commercial publishers, (3) personal consultation, (4) adult education clearinghouses, and (5) field visits. Each of these resources will be described briefly:

- A computerized literature search was conducted through the DIALOG system. It accessed the ERIC database as well as other relevant databases. The primary descriptors used for this search were vocational education, admission criteria, adult education, minimum competencies, adult literacy, adult basic education, and prevocational skills. Although 822 citations were provided through this search, many of the citations were too tangential to be directly useful.

- Numerous letters were sent to commercial publishers who have developed adult basic education instructional materials and basic skill assessment techniques. The publishers were identified through bibliographies, lists of exhibitors at the American Vocational Association and the American Association of Adult and Continuing Education conventions, and the *AV Marketplace*.

- Personal consultations with various specialists in the fields of adult literacy, adult basic education, and vocational education were frequently used to obtain information about issues, problems, programs, and materials.

- The following clearinghouses were contacted for information:

  — National Adult Education Clearinghouse, Montclair State College, Montclair, New Jersey

  — Clearinghouse on Adult Education, Office of Vocational and Adult Education, Department of Education, Washington, D.C.

  — Competency-Based Adult Education Network, Office of Vocational and Adult Education, Department of Education, Washington, D.C.

  — Vocational Education Curriculum Materials (VECM) database, The National Center for Research in Vocational Education, The Ohio State University, Columbus.

  — ERIC Clearinghouse on Adult, Career and Vocational Education, The National Center for Research in Vocational Education, The Ohio State University, Columbus.

  — Six regional curriculum coordination centers

- Field visits were made to selected Ohio educational institutions and agencies that provide literacy training to various adult populations seeking employment and vocational training. The adult populations included displaced homemakers, public offenders, refugees and immigrants, dislocated workers, and the chronically unemployed. The purpose of the field visits was to obtain firsthand information about the literacy problems faced by these populations, to see how they were being helped, and to discover the instructional methods and materials being employed. The field settings were joint vocational schools, adult skill centers, a community college, a halfway house, and volunteer literacy agencies.

Panel of Experts

A nine-person panel of experts was established to advise project staff. Their primary task was to validate and refine a pilot list of generic basic skills required for adults to enter vocational training. Additionally, the panel assisted in other aspects of the project such as the identification of instructional materials, basic skill assessment approaches, and formulation of future research and practice recommendations. The panel was composed of the following members:

- Ms. Janet A. Boone
  Director of Assessment
  Displaced Worker Center
  Triton College
  Rivergrove, Illinois

- Dr. James A. Dunn
  Director
  Institute for Occupational Education
  Cornell University
  Ithaca, New York

- Dr. Ruth Nickse
  Associate Professor
  Division of Reading and Language Development
  School of Education
  Boston University
  Boston, Massachusetts

- Mr. George Quarles
  Vocational and Adult Education Consultant
  former Chief Administrator, Occupational and Career Education
  New York City School System
  New York, New York

- Dr. Robert Schneiders
  President
  Educational Data Systems
  Dearborn, Michigan

- Mr. Barry F. Semple
  Director
  Division of Adult Education
  State Department of Education
  Trenton, New Jersey

- Ms. Elaine Shelton
  Curriculum Specialist
  Extension Instruction and Materials Center
  University of Texas at Austin
  Austin, Texas

- Dr. Robert P. Sorenson
  State Director
  Vocational Education
  Madison, Wisconsin

- Ms. Linda Stoker
  Director of Basic Skills Attainment
  Polaroid Corporation
  Cambridge, Massachusetts

Case Studies

In order to provide a real-world view of how adult vocational training institutions assist adults with basic skill deficiencies, three institutions were selected as case studies. The institutions were selected on the following criteria:

1. They represented contrasting adult training settings (i.e., a community college, a joint area vocational school, and an adult skill center).

2. They had a commitment to providing basic skill training to facilitate entry into vocational training.

3. The commitment was in operation for at least 2 years or more.

Case-study field visits were made to two of the institutions. The third case study was conducted by reviewing materials by mail and telephone interviews with staff.

A structured common information format was used to obtain data from each institution. The format was designed to obtain data in four categories:

1. Demographic and descriptive information about the institution (i.e., description of setting, students, faculty, and vocational programs)

2. How basic skill requirements are determined for entry into vocational programs

3. How students' basic skills are assessed

4. Basic skill instructional procedures and materials

Dissemination Activities

A plan for disseminating information obtained by the study was developed. The plan consisted of several activities to stimulate study awareness and to share findings. The activities included the following:

1. A project profile was prepared in the initial phase of the study. The profile enabled staff to communicate with the target audience throughout the study. Over 300 profiles and letters were sent throughout the country in reply to inquiries.

2. A presentation was made at the annual convention of the American Association of Adult and Continuing Education in Philadelphia, on 2 December 1983.

3. A presentation to the Council of State Directors of Adult Education Meeting in Philadelphia, on 2 December 1983.

4. Announcements of the study were made in national newsletters such as The Competency-Based Adult Education Network.

5. Three cost-recovery regional awareness conferences were conducted at Salt Lake City, Utah (1 May 1984), Redwood City, California (8 May 1984), and Columbus, Ohio (29 May 1984). The purpose of the conferences was to share study findings that would be useful to educators who are attempting to strengthen the linkage between basic skill instruction and vocational training.

6. The final report of the study will be available through the ERIC system.

7. The findings also will be considered for submission to professional journals.

CHAPTER 3

FINDINGS

There are three phases in the process of basic skill remediation for adults entering vocational training. *The first phase* is the identification of the basic skills that may be required to enable adults to begin to learn and perform the learning tasks in a specific training program. *The second phase* is the diagnostic assessment of these required basic skills, that is, to what degree do the student applicants possess the basic skills, and if there are deficiencies, specifically what are they? *The third phase* is the remediation of deficiencies through basic skill instruction.

This chapter will discuss the findings of this study for each of the three phases in the process of basic skill remediation for adults entering vocational training.

Specifying Basic Skill Prerequisites for Vocational Training

The identification of the basic skills required for adults to enter vocational training involved three steps: (1) specifying the criteria for identifying basic skills, (2) developing a pilot list of basic skills, and (3) validating the list through a panel of experts.

Specifying the Criteria for Identification of Basic Skills

The criteria used to identify the basic skills that are needed by adults in order to begin vocational training are as follows:

- The range of basic skills should be diverse and generic to reflect the wide variety of adult vocational training programs.
- The level of basic skills should ascend from zero-level literacy to higher levels of literacy to accommodate the dispersion of basic skill deficiency among adults.
- The basic skills should be limited to those required for entry into vocational training and not those taught as a vocational skill during training and/or nonvocational skills that are required for daily living.

Developing a Pilot List of Basic Skills

A comprehensive review of the literature was conducted to identify existing studies that developed lists of basic skills related to vocational training. After an examination of numerous lists, it was found that many did not meet the criteria because the basic skills specified in the lists were

concerned only with life skills, involved job skills beyond entry to vocational training, were too advanced, and/or were not at a level low enough to embrace zero-level illiterates. The lists that were most useful for the purpose of this project were those that addressed prevocational basic skills, namely those of Cooney (1981); Dorr (1981); Dunn, Gray, and Martini (1982); Greenan (1983); and Latham (1983). These lists were derived from surveys of vocational teachers and expert panels representing various vocational training programs. A synthesis of these lists provided a pilot list of basic skills.

Validating the List of Basic Skills

The pilot list of basic skills was validated and refined by the project's panel of experts at a workshop at the National Center. The panel members identified in chapter 2 were asked to review the list for its comprehensiveness with regard to criteria previously cited and to add, delete, and/or edit the skills as necessary. Overall, there was high consensus among the panel as to the content of the list. Suggested revisions were incorporated to produce a final list of basic skills that is hereafter referred to as "A Generic List of Basic Skills Required for Entry into Vocational Training."

Several comments concerning the content of the generic list are in order:

First, the list consists of 132 basic skills representing 5 areas: 32 mathematics skills, 52 reading skills, 21 writing skills, 14 speaking skills, and 13 listening skills.

Additional skill areas such as job adjustment skills, employability skills, computer literacy, interpersonal skills, and problem-solving skills were considered, but it was the opinion of the panel that these skills were not appropriate requirements for entry into vocational training. However, the panel did endorse these skills as being important and agreed that they should be acquired during vocational training.

Second, the list should be perceived as a generic pool of basic skills that will vary according to the uniqueness of individuals as well as training programs. For example, not all students can learn to read phonetically, and not all training programs require students to use the metric system.

Vocational programs vary considerably as to the degree of emphasis and level for a basic skill area. For example, the basic skill requirements for training an electronic technician as compared to training a key punch operator will differ markedly. The former will require higher levels of math. Even within the same vocational program areas, such as trade and industrial, agricultural, business, health, and home economics, there are wide variations as to basic requirements for entry (e.g., agricultural mechanics versus ornamental horticulture). In some instances it has been found that even within the same geographical region, the same training program such as Licensed Practical Nurse (LPN) varied as to the reading prerequisites. Of 12 training sites, 8 required a 10th grade reading level, one an 11th grade level, one a 12th grade level, and 2 required either a high school diploma or a General Educational Development (GED) test equivalent (Robertson 1983). In view of these prerequisite basic skill variations, it is really up to the specific vocational programs to establish their own prerequisites. Consequently, the generic list can only serve as a guide for selecting appropriate basic skill areas and levels as prerequisites for entry into vocational training.

Third, at least four different methods have been used to specify basic skill prerequisites for vocational training. No research data could be found as to which method is superior. Consequently, the following methods are not ranked in order of their validity.

- **Instructor opinion**—Vocational instructors establish program prerequisites based upon their opinions of the basic skills needed to deal with the program content.

- **Panel of experts**—A panel of experts who are knowledgeable with the program convene to determine basic skill prerequisites, based upon a systematic analysis of the program learning tasks. The panel could vary in composition, but often includes instructors, expert workers, and supervisors in the occupation, and a panel facilitator. For an example of this method, see Latham (1983).

- **Surveys**—A survey of such program experts as vocational instructors, program administrators, and occupational specialists is conducted to establish consensus for basic skill prerequisites for a given program. Typically this method involves sending a predetermined list of basic skills to the respondents and asking them to rate the degree to which a specific basic skill is necessary for their training program. For examples of this method, see Dorr (1981) and Greenan (1983).

- **Program content analysis**—An expert(s) analyzes the content of the learning tasks to include textbooks, materials, manuals, equipment, tools, and so forth to determine the basic skills required to perform these tasks. Most of these analyses have dealt with math and reading skills, but the basic methodology could be applied to other skills, such as writing, speaking, and listening. For examples of this method see Long (1980), Thornton (1980), and Sticht (1980).

A variation of this method has been developed by Cooney (1981) in which the vocational instructor teams with a vocational counselor to analyze carefully the content of the training (text, materials, tests, and so forth) in order to determine the required basic skills. An added feature of Cooney's method is that the counselor then uses these required basic skills to construct an Entry Standard Assessment (ESA) for that training program. The ESA is a "skills check" booklet that lists representative basic skill test items written in the context of the job or training program. Subsequently, the ESA is used to counsel and screen the training applicant to determine the degree to which the applicant has the necessary basic skills to enter training. If the applicant is deficient in basic skills, he or she is referred for remediation. The ESA is also keyed to a taxonomy of basic skill instructional objectives that explicitly guides remediation.

Cooney's method actually goes considerably beyond simply specifying basic skills. It represents a complete systematic process of remediation (i.e., specifying basic skills, assessing the skills, and providing remedial instruction). Additionally, it has a provision for vocational counseling and career exploration. This brief overview does not fully treat its many features. The interested reader is encouraged to examine the complete system by obtaining the materials from Cooney, San Mateo County Public Schools, Redwood City, California.

On the following pages, exhibit 1 provides a generic list of basic skills required for entry into vocational training as compiled by this study.

Assessing Students' Basic Skills

The second phase in basic skill remediation for adults entering vocational training is basic skill assessment. There are two purposes for assessment: (1) to determine whether an individual student has the necessary basic skills to succeed in a given vocational training program and (2) to provide sufficient diagnostic information to guide basic skill remediation if the student is deficient in a basic skill.

EXHIBIT 1

A GENERIC LIST OF BASIC SKILLS REQUIRED FOR ENTRY INTO VOCATIONAL TRAINING

Mathematics

A. Read, Write, and Count

The adult will be able to perform the following whole number operations:

1. Given a series of numbers in numeral form (e.g., 10, 20, 30), copy the series in handwritten form.
2. Identify place value of digits in a given whole number with up to seven digits.
3. Read a given whole number of less than 10 million and write it out in words.
4. Write a whole number of less than 10 million when given the number spelled out in words.
5. Count a set of up to 100 objects and state or write the number of objects counted.
6. Arrange a set of whole numbers in ascending or descending order.

B. Whole Numbers

Given appropriate whole number problem sets, the adult will be able to solve problems involving the following:

7. Addition of whole numbers without and with carrying
8. Subtraction of whole numbers without and with borrowing
9. Multiplication of whole numbers without and with carrying
10. Division of whole numbers with quotients expressed, if necessary, with whole number remainders
11. Division of whole numbers with quotients expressed, if necessary, with fractional or decimal remainders
12. Rounding off to the nearest whole number

C. Fractions

Given appropriate fraction and/or mixed number problem sets, the adult will be able to solve problems involving the following:

13. Addition of common and mixed fractions with like and unlike denominators
14. Subtraction of common and mixed fractions with like and unlike denominators

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SOURCE: Most items in this list have been reproduced with permission from Cooney (1980) and Dunn, Gray, and Martini (1982)

15. Multiplication of common and mixed fractions
16. Division of common and mixed fractions

D. Decimals

Given appropriate decimal number problem sets, the adult will be able to solve problems involving the following:

17. Addition of simple and mixed decimals
18. Subtraction of simple and mixed decimals
19. Multiplication of simple and mixed decimals
20. Division of simple and mixed decimals

E. U.S. Customary (English) and Metric Measurement

Given appropriate U.S. customary (English) or metric unit measurement problem sets, the adult will solve problems involving the following:

21. Linear measurement with accuracy to the nearest unit necessary
22. Area measurement with accuracy to the nearest unit necessary
23. Volume and capacity measurement with accuracy to the nearest cubic, fluid, or dry unit necessary
24. Mass or weight measurement with accuracy to the nearest unit necessary

F. Numeric Relationships

Given appropriate problem sets, the adult will solve problems involving the conversion, in either direction, of the following:

25. Common fractions and decimal fractions
26. Common fractions and percents
27. Decimal fractions and percents
28. U.S. customary measurement units and equivalent metric units

G. Simple Linear Equations and Other Problem Solving Skills

Given appropriate problem sets, the adult will solve problems involving the following:

29. Estimation and approximation
30. One- and two-step linear equations

EXHIBIT 1—Continued

31. Identification of the information and operations necessary for, and the solution of, applied problems such as time, rate, and distance
32. Use of a hand-held calculator

Examples of Mathematical Tasks in Vocational Training

Read gauges and dials.

Total a bill for services.

Calculate a discount.

Convert temperature from Fahrenheit to Centigrade.

Calculate the number of square feet of a room's floor.

Measure the distance between two points.

Determine the diameter of a pipe.

Calculate the proportions of ingredients for a recipe.

Estimate the amount of lumber required to build an object.

Inventory the number of items in stock.

Weigh produce.

Determine cost per unit.

Calculate overhead costs.

Calculate the number of yards of material needed for a pattern.

Organize decimal numbers in descending order of magnitude.

Determine the cost of a job based upon an hourly rate of pay.

Determine the time it takes to travel between two points based on an hourly rate of speed.

Reading

A. Letters of the Alphabet and Numbers

1. Given letters of the alphabet in manuscript form and in random order, the adult will pronounce each letter correctly.
2. Given the letters of the alphabet in manuscript form and in random order, the adult will read each letter correctly in the proper alphabetical order.
3. Given whole numbers, fractions, decimals, percents, and simple Roman numerals, the adult will pronounce each correctly.

EXHIBIT 1—Continued

B. Visual and Auditory Discrimination

Sounds

4. Given a list of word pairs orally, the adult will indicate which word pairs rhyme and which don't.
5. Given a list of word pairs orally, the adult will indicate which word pairs begin with the same sound and which pairs don't.
6. Given a list of word pairs orally, the adult will indicate which word pairs have the same vowel sound and which pairs don't.
7. Given a list of word pairs orally, the adult will indicate which word pairs have the same ending sounds and which pairs don't.

Consonants

8. **Beginning consonants:** Given a familiar word and a list of consonants the adult will make new words by substituting each of the consonants for the initial one in the original word. The adult will pronounce each newly formed word correctly.
9. **Beginning consonant blends:** Given orally a list of words that begin with consonant blends, the adult will correctly identify the letters making the initial blend sound. Initial blends will include:

   dr, fr, bl, cl, fl
   sc, sm, sp, cr, tr, br
   st, gr, pl, sn, sl, sw
   gl, sk, pr, str, spr, tw, squ
   scr, shr, thr, spl, kn, ch, gn, pn

10. **Final consonants:** Given orally a word ending in a consonant and a written list of letters, the adult will identify from the list the final consonant.
11. **Final consonant blends:** Given orally a list of words which ending with consonant blends, the adult will correctly identify the letters making the final blend sound. Final consonant blends will include:

    ft, sk, st, sp, ld, rd, rk, rt,
    nk, nd, ng, nt, lm, mp.

Vowels

12. **Short vowel sounds:** Given one-syllable words having short vowels in initial or medial position, the adult will blend the sound patterns together to produce the correct sound.
13. **Long vowel sounds:** Given a list of one-syllable words with a short vowel, the adult will make new words with a long vowel sound by adding a final E and will pronounce the new word correctly.

EXHIBIT 1—Continued

14. **Vowel diphthongs:** Given a list words having the vowel digraphs *au*, *aw*, *ew*, *eu*, *oo*, *ou*, *ie*, and *ei*, the adult will pronounce each word correctly.

15. **Vowels with *r*:** Given a list of words containing a single vowel followed by the letter *r*, the adult will pronounce each word correctly.

16. Given a one-syllable word in which there is a single vowel at the beginning or in the middle, the adult will pronounce the vowel with a short sound.

17. Given a one-syllable word that has a single vowel at the end, the adult will pronounce the vowel with a long sound.

18. Given a one-syllable word with this pattern: CVCE, the adult will pronounce the vowel with a long sound.

19. Given the letter combinations: *ai*, *oa*, and *ea* in one-syllable words, the adult will pronounce the combination according to the more common pattern of making the first vowel long and the second vowel silent.

20. Given one-syllable words in which the letter combinations *er*, *ir*, and *ur* appear, the adult will pronounce the combinations as "*ur*."

21. Given a one-syllable word in which *a* is followed by *r*, the adult will pronounce the sound neither long, nor short, but as in the word "car."

22. Given a one-syllable word in which a vowel is followed by two consonants and a final *e*, the adult will pronounce the vowel with a short sound.

23. Given the letters *ti*, *ci*, or *si* in a word, the adult will pronounce the combination as "*sh*."

24. Given a word in which *c* or *g* are followed by *e*, *i*, or *y*, the adult will pronounce those letters with a soft sound.

25. Given a list of words, the adult will identify those that have a schwa sound in an unstressed syllable.

26. Given a list of words containing the four sounds of *y*, the adult will pronounce the words correctly.

27. Given a list of words containing the different sounds of *gh* and *ght* the adult will pronounce the words correctly.

Syllables

28. Given a multisyllable word in which two consonants follow the first vowel, the adult will divide that word between the two consonants. (Students will recognize that consonant blends and digraphs are treated as a single consonant.)

29. Given a multisyllable word in which a single consonant follows the first vowel sound, the adult will divide that word in two possible places V/CV VC/V and give three possible pronunciations (vowel as long, short, or schwa)

30. Given a word in which the letters *-le* follow a consonant, the adult will divide the word making the CLE letters a single syllable.

EXHIBIT 1—Continued

31. Given a word in which there are prefixes or suffixes, the adult will syllabicate that word showing that prefixes and suffixes form their own syllables.

32. **Prefixes, suffixes, roots:** The adult can state the meanings of common Latin and Anglo-Saxon prefixes, suffixes, and roots.

33. **Accents:** The adult can list the 4 basic clues for finding the accented syllable:

    Clue I: The accent falls on a root, generally, when one or more prefixes or suffixes are added.

    Clue II: The accent generally falls on the syllable that precedes these suffixes: *sion, tion, ic*.

    Clue III: For words of three or more syllables, one syllable generally stands between the accented syllable and the silent *e* syllable.

    Clue IV: The accent generally falls on the syllable that precedes the vowel *i* when this letter occurs before a final syllable.

C. Basic Sight Words

34. Given the Barnes Revised Dolch list of 193 words, the adult will read all words correctly.

D. Reading for Facts and Information

35. Given appropriate reading material, either prose or abbreviated sources,* the adult will be able to obtain needed factual information.

E. Reading for Instruction

36. Given appropriate reading material, either prose or abbreviated sources, the adult will identify and follow procedures and directions to achieve some specific end.

F. Reading for Ideas

Given appropriate reading material, either prose or abbreviated sources, the adult will be able to read and subsequently demonstrate adequate understanding of the following:

37. Cause and effect relationships

38. Sequential and temporal relationships

39. General and technical concepts

40. Physical and social principles

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*Abbreviated sources of reading material include tables of contents, glossaries, indexes, outlines, forms, and graphic presentations such as charts, schedules, tables, graphs, maps, figures, and diagrams.

EXHIBIT 1—Continued

G. Reading to Infer Meaning

Given appropriate reading material, either prose or abbreviated sources, the adult will do the following:

41. Use context clues to determine the meaning of unfamiliar words (e.g., experience clues, synonym clues, association clues, previous contact clues)
42. Examine the structure of unfamiliar words to determine if there are recognizable parts that give clues to their meaning (e.g., syllables, affixes, compound words)
43. Distinguish between a word's denotation and connotation
44. Infer meaning from the order and sequence of words as well as the words themselves
45. Synthesize and infer meaning from simple verbal, spatial and/or mathematical data

H. Reading to Generalize

Given appropriate reading material, either prose or abbreviated sources, the adult will be able to do the following:

46. Draw conclusions from the facts given
47. Predict future events based on the facts given
48. Extend applications from the facts given

I. Reading to Detect Fallacy or Persuasive Intent

Given appropriate reading material, the adult will identify the following:

49. Fallacious arguments
50. Inconsistent facts
51. Illogical conclusions
52. Author bias in tone, use of emotionally loaded words and selective choice of information

Examples of Reading Tasks in Vocational Training

Use a catalog to order parts/merchandise.

Obtain information from a telephone book.

Review school policy, procedures, and rules.

Interpret product labels.

Understand safety signs.

EXHIBIT 1—Continued

Read directions for cleaning equipment.

Take written tests and exams.

Read instructional materials, such as textbooks, outlines, and shop manuals.

Interpret graphs and charts.

Use a map to locate a street.

Read a list of tools and materials to be purchased.

Interpret a bus schedule.

Understand step-by-step instructions for assembling an object.

Identify the parts of an object.

Read standard forms.

Locate library materials.

Learn new ideas from a trade magazine.

Read shop manuals for troubleshooting.

Proofread a list to detect errors.

Writing

A. Letters of the Alphabet

1. Given the letters of the alphabet in random order, the adult will write or print the letters in alphabetical order.

B. Copying Text and Drafts

2. Given written numbers, letters of the alphabet, words, sentences, and/or paragraphs, the adult will copy them correctly.
3. Given sentences or paragraphs organized in a rigid form (e.g., a business letter, report, etc.), the adult will copy them exactly.

C. Capitalization

4. Given a writing assignment that calls for capitalizing appropriate words, the adult will identify the words in sentences that should be capitalized.

D. Spelling

5. Given a writing assignment, the adult will spell common words correctly.

EXHIBIT 1—Continued

E. Punctuation

Given a writing assignment that calls for punctuation, the adult will correctly use the following:

6. Commas, colons, semicolons, dashes, quotation marks
7. End marks
8. The singular, plural, singular possessive, or plural possessive forms of nouns

F. Handwriting

9. Given a writing assignment, the adult's penmanship will be legible enough to be read either in cursive or printed form.

G. Grammar

Given an appropriate writing assignment, the adult will use the following:

10. Regular and irregular verbs accurately in context with reference to tense and numbers
11. Positive, comparative, and superlative adjectives and adverbs in context correctly
12. Pronouns to take the place of nouns

H. Phrases, Sentences, Paragraphs

Given an appropriate writing assignment, the adult will do the following:

13. Place modifiers correctly
14. Complete sentences
15. Use parallel construction to classify relationships emphasizing similarities and differences
16. Avoid run-on sentences
17. Clarify meaning by subordinating
18. Use an effective sequence of sentences to form paragraphs

I. Letters, Reports, and Messages

19. Given an appropriate writing assignment the adult will construct letters, reports, and messages using appropriate format and length.

J. Forms and Applications

20. Given a sample form or application such as for employment, Social Security, credit, etc., the adult will complete the form or application correctly and legibly

EXHIBIT 1—Continued

K. Dates and Time

21. Given a date and time of day, the adult will write them accurately using correct punctuation and capitalization.

Examples of Writing Tasks in Vocational Training

Describe a machine malfunction.

Complete a work order form.

Fill out a time card.

Alphabetize material for filing or sorting.

List parts/items to be ordered.

Answer essay test questions.

Complete a customer complaint form.

Construct a safety sign.

Fill out an inspection report.

Record the behavioral observations of a patient.

Complete a sales receipt.

Record a telephone message.

Complete an accident report.

Take class notes and assignments.

Copy the serial number, model number, and brand name of an appliance.

Label materials/items for storage or display.

Keep a log of work trips.

Address correspondence.

Schedule appointments.

Outline a schedule of work.

Speaking

A. Selecting Words

Given an appropriate speaking situation, the adult will choose appropriate words that will achieve the following:

1. Avoid using inappropriate emotional words

EXHIBIT 1—Continued

2. Choose between technical and lay terms depending on the audience
3. Use slang only as appropriate
4. Communicate thoughts, actions, feelings, ideas, observations and inquiries effectively

B. Speaking Face to Face

Given a speaking situation, the adults will initiate, maintain, or conclude a conversation by doing as follows:

5. Pronounce words correctly and clearly given the constraints of the local dialect
6. Use appropriate cadence and inflection
7. Use appropriate body movements and tone of voice

C. Speaking over the Telephone

Given a speaking situation where a telephone is used, the adult will demonstrate the following:

8. Use associated services such as operator assistance, directory assistance, and the local directory
9. Use the correct technique for placing calls
10. Use proper protocol in identifying oneself and one's place of work and addressing the caller

D. Giving Information or Directions

Given an appropriate speaking situation, the adult will do as follows:

11. Describe orally, in a few short sentences, information about a given person, place, thing, or job performed
12. Describe an experience or some event that was witnessed (or read about)
13. Organize and express directions in a logical sequence
14. Explain to someone else how to perform a task, given experience at performing the task, or having learned from another person or a manual how to perform the task

Examples of Speaking Tasks in Vocational Training

Obtain and give telephone information.

Ask an instructor for explanations.

Ask customers clarifying questions.

EXHIBIT 1—Continued

Describe how something works.

Answer oral exam questions.

Order supplies, parts, materials.

Repeat a customer order.

Repeat or summarize a message.

Express an idea to improve a process.

Ask for assistance in a hazardous situation.

Communicate with a co-worker in a cooperative activity such as the installation of equipment.

Display appropriate protocol and courtesy to a dissatisfied customer.

Ask for directions.

Give instructions.

Describe an item or service for purchase.

Summarize a group meeting or activity.

Listening

A. Literal Comprehension

Given appropriate listening situations, the adult will listen for the following:

1. Obtain specific information
2. Identify procedures and directions to follow and/or to achieve some specific end
3. Understand general and technical concepts
4. Understand sequential and temporal relationships, including cause and effect relationships
5. Identify the correct meanings of words that sound similar but are different in meaning
6. State the meanings of selected words heard in context
7. Identify the main idea from a given speech that has just one main idea
8. List facts from an oral statement to support the main idea

B. Interpretive Comprehension

Given appropriate listening situations, the adult will listen for the following:

9. Use context clues to infer the meaning of unknown words

EXHIBIT 1—Continued

10. Draw conclusions from the facts given
11. Predict future events based on the facts given
12. Extend applications from the facts given
13. Identify what additional information is needed after hearing a conversation

Examples of Listening Tasks in Vocational Training

Detect abnormal noises in machinery or equipment.

Understand customer requests/complaints.

Record telephone messages/orders.

Understand safety instructions/warnings.

Comprehend oral exam questions.

Understand directions/instructions.

Determine questions to ask for further instructional clarification or explanation.

Since there are a large number of available assessment instruments, it is recommended that criteria be established for the selection of instruments. Although criteria will vary as to the specific needs of a given program, Robertson (1983) has proposed what he calls the "Characteristics of an Ideal Occupational Basic Skills Assessment Instrument." The characteristics are based upon his extensive survey of assessment for occupational training. He cautions that no single test will meet all of the characteristics. The criteria are as follows:

1. The instrument should contain sufficient items to give a valid measure of students performing at a low level of functional skills regardless of their ages or involvement in secondary, adult, or postsecondary occupational programs.

2. The instrument should contain sufficient test items to give a valid measure of the upper levels of basic skill performance for a variety of programs. It should also be applicable to 2-year colleges or secondary technical education programs requiring advanced reading or math skills.

3. The instrument should contain sufficient test items that reflect specific basic skills needed to function in a variety of occupational education or work settings; reading passages should be either specifically or generally occupationally referenced, or at least be expressed in terms reflecting life functional basic skills.

4. Test scores should either indicate mastery of a specific basic skill or indicate a functional competency level in this basic skill. If test subscores are referenced to specific occupational program clusters of performance levels, so much the better.

5. Test scoring should provide for a diagnostic analysis of test items to aid in delivery of basic skills instruction (provide an evaluation of subskills within the skill area)

6. There should be sufficient information on how the test was constructed and how the test items were selected, validated, and field-tested to indicate the general quality level of the instrument.

7. The test should require neither individual administration nor specialized equipment to administer or to score it locally.

8. A test score report form should be available that is easily understandable by all staff and students and that provides opportunities for either group score reporting or individual student profiles.

9. The test should be readily available.

Since it was beyond the scope of this project to conduct a review of assessment instruments, the reader is referred to two recent reviews that served that end—Anderson (1981) and Robertson (1983). Although both reviews are excellent, Robertson focuses specifically on vocational training and tends to have more direct relevance for this document.

What tests are available for assessing basic skills? Based upon his study, Robertson compiled a list of the most commonly used tests for basic skills. The list is reproduced with permission and with the addition of several newer tests (see exhibit 2). This list is organized into eight categories according to measurement characteristics such as competency level, intended population, and/or psychometric properties. It should be recognized that some of the tests listed do have levels of

EXHIBIT 2

TESTS THAT CAN MEASURE

Minimum Competency or Lower-Level Performance (Sixth Grade Reading or Lower)

Adult Basic Learning Examination (ABLE): (11)

Adult Performance Level Program (APL): (11)

Basic Skills Assessment: Minimum Competency Tests (BSA): (1)

Brigance Diagnostic Inventory of Essential Skills-individual (IES): (5)

Cornell Tests of Basic Skills: Arithmetic, Mathematics and Reading Comprehension (CTBS): (4)

Everyday Skills Test (EST): (6)

Minimum Essentials Test (MET): (17)

Objectives-Referenced Bank of Items (ORBIT)—test is custom-made at lower performance levels through users' item selection; (6)

Rapid Assessment—The Numerical Assessment Unit (NA): (14)

School Curriculum Objective Referenced Evaluation (SCORE)—Adult Literacy (12): (15)

SRA—Reading and Arithmetic Indexes (SRA): (16)

Tests of Adult Basic Education—(TABE) level E: (6)

10,000 Item Test Bank (ETS)—custom-made tests of basic skills: (9) and Wide-Range Achievement Test (WRAT): (13)

Basic Skill and High Level Performance

Adult Basic Learning Examination (ABLE): (11)

California Achievement Test—Levels 14-19 (CAT): (6)

Comprehensive Tests of Basic Skills (CTBS): (6)

Cooperative English Tests (COOP): (1)

Diagnostic Reading Tests (DRT) survey section: upper level: (3)

SOURCE: Reproduced with permission from Robertson (1983)

EXHIBIT 2—Continued

Flanagan Industrial Tests (FIT) arithmetic, math and reasoning, test and vocabulary, judgment and comprehension test: (16)*

Gates-MacGinite Reading Tests (GATES)—level F test: (12)

Industrial Reading Test (IRT)—form B: (11)

National Assessment of Educational Progress (NAEP)—released math exercises: difficulty level determined locally by items selected: (7)

Nelson-Denny Reading Test (NDRT): (12)

SRA Achievement Series: Math and Reading (ACH)—level H: (16)

Broad-Range Instruments (High, Middle, and Minimum Level Performance)

Tests listed may lack sufficient items to measure performance validly at all levels within the range of the test; varying levels of a given test may have to be administered in a group session, or a "locator" test may have to be used to determine appropriate test level.

Adult Basic Learning Examination (ABLE): (11)

California Achievement Test—Levels 14-19 (CAT): (6)

Cognitive and Conceptual Abilities Test (C-CAT): (14)

Cornell Tests of Basic Skills: Arithmetic, Mathematics, and Reading Comprehension (CTBS): (4)

Iowa Tests of Basic Skills (ITBS): (14)

Metropolitan Achievement Tests—Varying levels (MAT): (11)

National Assessment of Education Progress-Related Math Exercises for Age Performance Levels 9, 13, 17, and Adult (NASEP): (7)

Objective-Referenced Bank of Items and Tests (ORBIT): (6)

Sipay Word Analysis Tests (SWAT): (10)

Stanford Diagnostic Reading and Mathematics Test (SDRT)—varying levels: (11)

Test of Adult Basic Education (TABE)—levels E, M, and D: (6)

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*The two Flanagan tests are listed in the *Science Research Industrial Testing Catalog* (1983)

EXHIBIT 2—Continued

10,000 Item Test Bank (ETS)—Custom-made tests of basic skills: (9)

Wide-Range Achievement Tests (WRAT)—levels 1 and 2; few items at each level: (13)

Tests That Have Performance Referenced, Occupationally Referenced, or Mastery Levels of Skills That Are Indicated in Score Results

Basic Skills Assessment: Minimum Competency Tests (BSA): (1)

Brigance Diagnostic Inventory of Essential Skills (IES): (5)

Cognitive and Conceptual Abilities Test (C-CAT)—levels cross-walked to Dictionary of Occupational Titles (DOT) codes: (14)

Cornell Tests of Basic Skills: Arithmetic, Mathematics and Reading Comprehension (CTBS)—Score breakouts by secondary program area under development: (4)

Diagnostic Mathematics Inventory (DMI)—Master Reference Guide of Performance Objectives must be ordered (DMI): (6)

Diagnostic Reading Tests (DRT) survey section: (3)

Enright Diagnostic Inventory of Basic Arithmetic Skills (5)

Everyday Skills Test (EST): (6)

Flanagan Aptitude Classification Tests (FHCT)—score levels for different clusters of occupations (i.e., farmer, mechanic, clerk): (16)

Industrial Reading Tests (IRT)—only one with average number correct answers by groups of high school students in several occupational curriculums: (11)

Metropolitan Achievement Test (MAT)—if instructional test component is also used and publisher's scoring service ordered: (11)

Minimum Essentials Test (MET)—math section (17)

National Assessment of Educational Progress (NAEP)—released exercises math must be used with Instructional Objectives Catalog: (7)

Objectives-Referenced Bank of Items and Tests (ORBIT): (6)

Rapid Assessment-The Numerical Assessment Unit (NAU): (14)

School Curriculum Objective Referenced Evaluation (SCORE)—Related to adult literacy objectives: (12) (15)

EXHIBIT 2—Continued

Science Research Associates Achievement Series—vocational high school student norms available for form H: (16)

Senior High Assessment of Reading Performance (SHARP): (6)

Sipay Word Analysis Tests (SWAT): (9)

Stanford Diagnostic Reading and Math Tests (SDRT): (11)

Tests of Adult Basic Education—score and performance interpretation is based on children's performance *not* adult's performance on the 1970 California Achievement Tests (TABE): (6)

Tests of Achievement in Basic Skills (TABS) (8)

Test of Performance in Computational Skills—scores are reported in reference to problem-solving performance and objectives and not to mathematics functional capabilities (TOPICS): (6)

Achievement Test with Most Items Referenced to Academic Education

California Achievement Test (CAT): (6)

Comprehensive Tests of Basic Skills (CTBS): (6)

Cooperative English Tests (COOP): (1)

Gates-MacGinite Reading Test (GATES): (12)

Iowa Tests of Basic Skills (ITBS): (15)

Metropolitan Achievement Tests (MAT): (11)

Nelson-Denny Reading Test (NDRT): (12)

Tests of Adult Basic Education (TABE): (6)

Tests with Items Referenced to Work or Life Skills

Adult Performance Level Program (APL): (11)

Basic Skills Assessment Minimum Competency Test (BSA): (1)

Cornell Tests of Basic Skills: Arithmetic, Mathematics, and Reading Comprehension (CTBS): (4)

Everyday Skills Test (IRT): (11)

EXHIBIT 2—Continued

Minimum Essentials Test (MET): (17)

Cognitive and Conceptual Abilities Test (C-CAT): (14)

Senior High Assessment of Reading Performance (SHARP): (6)

Science Research Associates Achievement Series—form H; Publishers scoring service can generate "applied skills" score from life skills test items; (16)

Senior High Assessment of Skills and Written Composition (WRITE): (6)

Test of Performance in Computational Skills (TOPICS): (6)

Diagnostic and Prescriptive Instruments That Should Be Administered and Interpreted by Basic Skills Teacher or Testing Specialist

Brigance Diagnostic Inventory (IES): (5)

Diagnostic Reading Test Survey Section (DRT): (3)

Diagnostic Mathematics Inventory (DMI): (6)

Everyday Skills Test (EST): (6)

National Assessment of Educational Progress (NAEP)—released exercises: (7)

Objectives-Referenced Bank of Items and Test (ORBIT): (6)

School Curriculum Objective Referenced Evaluation (SCORE)—basic skills objectives and item bank: (12)

Sipay Word Analysis Tests (SWAT): (10)

Skills and Written Composition-Assessment of WRITE: (16)

Stanford Diagnostic Reading and Math Test (SDRT): (11)

Test of Performance (TOPICS)—diagnostic reports are ordered from publisher's scoring service: (6)

Tests Useful at Two-Year College Level

California Achievement Test (CAT)—Levels 18, 19: (6)

Comprehensive Tests of Basic Skills (CTBS): (6)

EXHIBIT 2—Continued

Cooperative English Tests (COOP): (1)

Diagnostic Reading Tests: Survey Section (DRT)—upper level: (3)

Flanagan Industrial Test (FIT)—arithmetic: math and reasoning test and vocabulary, judgment, and comprehension test: (6)

Gates-MacGinite Reading Tests (GATES)—level F: (12)

Industrial Reading Test (IRT)—Form B: (11)

National Assessment of Educational Progress (NAEP)—related exercises: Math: (7)

Science Research Associates Achievement Series (ACH)—level H: (16)

Senior High Assessment of Skills in Written Composition (WRITE): (16)

Stanford Diagnostic Reading Test (SDRT): (11)

measurement other than those indicated; other available levels are identified in the publisher's catalog. The number in parentheses refers to the publisher's code number. References to the publishers are at the end of this section (see exhibit 3).

Providing Remedial Instruction

In the interest of helping adults acquire literacy skills for entry into vocational training programs, this project sought to review and disseminate existing information on instructional materials as well as skill requirements. Several questions guided the inquiry concerning instructional materials:

- What and how many instructional materials are available to teach adult basic skills?
- Are instructional materials available to teach all the literacy skills required for adults to enter vocational training?
- Do these materials offer a vocational context?
- What kinds of instructional materials are used in vocational institutions to teach adult basic skills?
- How are instructional materials selected to teach adult basic skills in vocational education institutions?
- How are adult basic skill instructional materials used in vocational education institutions?

An early recognition was that English as a second language (ESL) texts needed to be considered as well as adult basic skill materials. The U.S. Department of Education's "Fact Sheet on Nationwide Functional Literacy Initiative" (n.d.) notes that each year 400,000 legal immigrants, 100,000 to 150,000 refugees, and 800,000 illegal immigrants are part of the estimated 2.3 million joining the pool of functionally illiterate persons.

The following discussion of findings represents an amalgamation of information gleaned from the various sources of information cited in chapter 2. Initially, a literature search going back 5 years yielded over 800 entries. A number of these entries supplied lists of adult basic skill and ESL instructional materials: Barabe et al. (1980), Bright et al. (1982), Dickinson et al. (1980), Drabek (1980), Goodman (1981), O'Brien (1982), Patterson (1979), Spore (1980), Stupp and Gage (1981), Utah State Office of Education (1982), and Vincennes University (1979).

The panel of experts reviewed a preliminary list of existing commercial instructional products and series numbered as follows:

Product Type	Number
Reading	110
ESL	76
Writing	47
Math	36
Listening	11
Speaking	6

EXHIBIT 3

PUBLISHER REFERENCES

(1) Addison-Wesley Publishing, Company/ETS
116 Belridge Road
Cheshire, CT 06410
(203) 272-8141

(2) The American College Testing Program
P.O. Box 168
Iowa City, IA 52240

(3) Committee on Diagnostic Reading Tests, Inc.
Mountain Home, NC 28785

(4) Cornell Institute for Occupational Education
The New York State College of Agriculture and Life Sciences
Stone Hall
Cornell University
Ithaca, NY 14853

(5) Curriculum Associates
84 Bridge Street
Newton, MA 02158

(6) CTB/McGraw-Hill
1221 Avenue of the Americas
New York, NY 01120

(7) National Assessment Project
Education Commission of the States
1860 Lincoln Street
Suite 700
Denver, CO 08295
(303) 830-3745

(8) Educational and Industrial Testing Service
P.O. Box 7234
San Diego, CA 92107

(9) Educational Testing Service, Inc.
Princeton, NJ 08540

(10) Educators Publishing Service, Inc.
74 Moulton Street
Cambridge, MA 02138

(11) HBJ/Psychological Corporation
757 Third Avenue
New York, NY 10017

(12) Houghton Mifflin (2) Company
Pennington-Hopewell Road
Hopewell, NJ 08525

(13) Jastak Associates, Inc.
1526 Gilpin Avenue
Wilmington, DE 19806
(302) 652-4990

(14) Pleasantville Educational Supply Corp. (SAGE)
21 Paulding Street
Pleasantville, NY 10570

(15) The Riverside Publishing Company (Houghton Mifflin)
1919 South Highland Avenue
Lombard, IL 60148

(16) Science Research Associates, Incorporated
144 North Wacker Drive
Chicago, IL 60606

(17) Scott Foresman and Company
1900 East Lake Avenue
Glenview, IL 60025

Approximately 20 noncommercial products and numerous sources had been identified as well. The panel of experts added more titles to the list of commercial and noncommercial materials.

The decision was made to contact known and likely publishers of adult basic skill and ESL instructional materials. This approach yielded new products and verified which older ones are still available. Approximately 230 letters and 10 to 20 phone calls went out to publishers requesting catalogs. Over 600 entries for the bibliography were obtained from catalogs received. The proportion devoted to each basic skill was roughly the same as before. Two more literature searches—of the National Adult Education Clearinghouse (NAEC) and Vocational Education Curriculum Materials (VECM) databases—were also requested. Valuable information was also obtained from the U.S. Department of Education's Clearinghouse on Adult Education and Competency-Based Adult Education Network.

The literature searches and publisher communications were all productive, but the numerous field contacts provided a meaningful foundation for interpreting those findings. The issue of linking vocational education with adult basic education prior to entry into training is not discussed in the literature. More commonly, entry-level skills for employment have been the focus. Both the study by Cornell's Institute for Occupational Education in 1980 and the one by Utah Technical College in 1982-83 use a model that links basic skills to occupational tasks during training, not before.

General Characteristics of Adult Basic Skill and ESL Instructional Materials

Approximately 200 catalogs and other publisher responses, plus 15 field contacts and an ABE coordinator's 2-day consultation, provide the basis for the following general observations about adult basic skill and ESL instructional materials. These observations have implications for some of the recommendations made in chapter 4 of this document.

Cost range. Materials to teach adult basic skills and ESL vary considerably in price. Small softcover booklets are available for under $5. Frequently, materials consist of several parts combined in a series: these series may contain from 3 to 20 books (usually softcover), 1 or more teacher's guides, posters, cassettes, workbooks, and answer keys. To purchase enough materials for a class, buyers would easily pay $50 to $100 for such a series, and often more. Buyers get around this expense in at least two ways. One way is to use consumable materials in a nonconsumable way by having students write their answers on a sheet of paper. An alternative is to purchase only one copy of a series to use orally with students or as a reference in developing one's own activities.

Computer and audiovisual materials are rather expensive. A program of diskettes or cassettes commonly costs $250. Audiovisual programs with filmstrips and tape cassettes are comparable in price. Occasionally one notes a computer program plugged into a specific hardware unit or an audiovisual program sold with equipment. These programs cost thousands of dollars.

Availability. Many commercial materials are on the market in all adult basic skill areas except speaking and listening. Print ESL materials are equally abundant. Frances A. Holthaus, the ABE coordinator at Upper Valley Joint Vocational School, Piqua, Ohio, who served as consultant, has observed that the market for all these materials is improving in the choices offered.

More than one explanation is possible for the paucity of materials designed to teach solely speaking and listening skills. To an extent, listening and speaking skills may be incorporated in materials to teach reading. They may also appear as a chapter or two in language arts materials to

teach writing. Certainly greater emphasis is placed on the "three R's" in adult literacy programs, in part no doubt reflecting the components of the GED exam. Only ESL materials usually focus on listening and speaking skills if the conversational method is stressed. (Adult basic skill instructors may find some of these ESL materials adaptable to teaching listening and speaking skills.)

The availability of adult basic skill instructional materials to teach listening and speaking skills perhaps reflects low buyer demand. A growing awareness of the need for workers to have the skills to follow oral directions and speak appropriately over the counter or on the phone may create more demand. Concurrently, the state-of-the-art regarding delineation of specific listening and speaking skills may advance so that publishers can expand curriculum offerings.

Type available. Commercial print materials far exceed any other type in number for both adult basic skill instruction and for ESL. Of 138 computer-based products cited in the bibliography, only 4 address teaching ESL. Surprisingly, few products of a predominantly audiovisual nature exist for adult basic skill or ESL instruction.

To emphasize this last finding, consider the approximately 250 letters and phone calls that went out to a list of publishers. This list was compiled from such sources as the literature search, publishers who exhibited at recent American Vocational Association and American Association of Adult and Continuing Education conventions, a manual obtained at a workshop given by staff of a National Diffusion Network-designated literacy project (Helm et al. 1983), and the Cornell and Utah projects previously mentioned. Approximately the same number of letters went to producers and distributors listed in the *AV Marketplace* by the descriptors "adult" and "language arts" and/or "mathematics." Yet by contrast, only 37 sources could be found for the relatively few existing relevant audiovisual materials for adult basic skills and ESL, whereas 464 commercial print entries and 138 computer entries were compiled from publisher responses for the bibliography.

Holthaus, an ABE coordinator who served as consultant for this study, has offered three possible reasons to explain the limited number of audiovisual materials available for adult basic skill and ESL instruction. She finds, first of all, a reluctance among adults—especially those working toward a GED—to use audiovisuals voluntarily. It seems that these students don't regard audiovisual materials as essential to passing the GED. Instead, they feel that such materials are to be used for fun or as something extra. "GED students," says this ABE coordinator, "want to bother with exactly what they must do to get the GED and nothing more." The woman who is a single head of household and on welfare, for example, has other things on her mind that narrow her basic skill goals and time lines.

Second, there is a problem in using audiovisuals, frequently because of a lack or malfunction of the hardware or equipment. So fewer programs make audiovisual products a priority in purchasing instructional materials for adult basic skills and ESL. Third, the cost of audiovisual materials reduces the demand. The limited availability may well reflect the market.

Comparison of commercial and noncommerical materials. A number of noncommercial materials exist to teach adult basic skills and ESL. Frequently, these are in the form of teacher guides rather than student materials. The 1984 exemplary products selected by the National Center for Research in Vocational Education's Dissemination and Utilization Program include several examples:

- *Voc-Ed Is Working: Communications Kit*
- *Mathematics in Vocational Education*

- *Speaking and Listening in Vocational Education*
- *Writing in Vocational Education*

Sources where such noncommerical products can be obtained are university instructional materials laboratories, national databases such as ERIC, NAEC, or VECM, or regional curriculum coordination centers as well as state departments of education.

Undoubtedly more commercial than noncommercial materials exist to teach adult basic skills and ESL. Commercial materials, unlike noncommercial materials, emphasize student materials often supported by a teacher's guide. All 15 of the field contacts concurred that programs give priority to purchasing commercial materials, which in turn are supported by teacher-designed activities.

It is hard to know which came first—the chicken or the egg; in this case, the demand for or the abundance of student materials to teach adult basic skills and ESL. Perhaps the focus on individualization of instruction within the teaching of these skills explains the issue, because commercial student materials offer an efficient way to provide individualized if not self-paced and hands-on instruction. The prevalence of commercial student materials in use may also reflect the capacity of commercial publishers to develop fully validated materials at a lower cost than smaller nonprofit organizations can. In addition, commercial products usually have the edge over noncommercial products in terms of streamlined and illustrated formats.

Life-coping skills. Some ESL materials, perhaps reflecting the immediate needs of immigrants and refugees, use life-coping skills as the topic if not the organizer of the content. *Practical Exercises in Everyday English* and *Lifelines* by Regents Publishing Company, In *Touch* by Longman, and *English That Works* by Lakeshore Curriculum Materials Company are all examples of learning language through typical encounters that challenge one's personal, social, and cultural adjustment.

Several products for teaching adult basic skills emphasize life-coping skills, often a reflection of the influence of the APL study conducted at the University of Texas during the 1970s. *Managing Money* by Steck-Vaughn and *The Be Informed Series* by New Reader's Press are two examples. Commercial materials focusing on life-coping skills sometimes fail to deal with an equal degree of scope and sequence with basic skill competencies. It is as though learning coping skills is the end and basic skills are one means rather than the reverse. Materials that appear not to deal with adult basic competencies somewhat systematically were not included with the bibliography. Exclusion does not suggest that such materials aren't valuable, but merely reflects the focus of this study.

The ABE coordinator who served as consultant for this study made an interesting observation about adult basic skill materials focused on life-coping skills. She has found that such materials are not very popular with adult students unless they are nonreaders. One wonders whether or not her observation may again reflect students working for a GED more than it does those seeking only to enter vocational training. On the other hand, it may mean that nonreaders are more concerned with life-coping skills since these skills are central to their struggle within the prison of illiteracy from which semiliterate readers have been freed.

Vocational education context. Very few materials designed for adult basic skill instruction or ESL provide a vocational context. McGraw-Hill Book Company publishes *English at Work* and Longman publishes *Start English for Science*, but both have only a general vocational context. *Welding*, an ESL text by Alemany Press, and *Understanding Technical English*, a three-level reading series by Longman, perhaps come the closest of all the bibliography's entries to integrating a

specific vocational education area with adult basic skill instruction. Others may exist, but this project could not find them. The products that have a theme of careers may include an activity on how to fill out a job application or speak during a job interview, but neither of these activities is going to prepare an adult to enter vocational training successfully.

There are beginning vocational education texts such as Delmar Publishers' *Practical Problems in Mathematics for Electricians* and *Math Principles for Food Service Occupations*, which were omitted from the bibliography. *Practical Problems* may be useful to supplement an electricity course text, but seems rather advanced for someone with low math skills. Although diagrams and other visuals are frequent, few signs of basic skill text formatting are present. One is told to review the concepts of addition, multiplication, and so on through a series of problems, but the review process is not spelled out in small steps for the learner. *Math Principles* contains a 3-unit review of basic math in a 20-unit text. Obviously a review of basic skills is helpful but not sufficient on which to base an adult basic math course. Furthermore, since the first 100 words of the review test out at grade 11 reading level (according to the Fog Index), this text may be too hard for many adult basic skill students to read.

Perhaps publishers believe that it is impractical to focus a whole basic skill text on one occupation, when a more general treatment would make the book appropriate for all students in an adult basic skill class to use. A number of adults enrolled in an ABE class, for example, may be undecided about which career to pursue; they only know that passing the GED is necessary to be hired for many jobs. To them a text focusing on a specific occupation in a basic skills text might seem like busywork or irrelevant. Furthermore, the problems put in a vocational context may not reflect the kind of problems asked on the GED exam.

Whatever the reason, the dearth of integrated basic skill/vocational education texts may be unfortunate in light of a series of research studies conducted in the 1970s. Campbell-Thrane et al. (1983) cite these studies (Huff et al. 1977; Kirsch and Guthrie 1977-1978; Larson, 1979; Northcott 1975; and Sticht et al. 1972) and conclude that "the past several years have shown that higher payoffs from vocational training can be expected when basic skills instruction (principally remedial) and vocational skills acquisition are functionally tied together" (pp. 1-2).

Kinds of Instructional Materials Used in Vocational Institutions to Teach Adult Basic Skills and ESL

The findings relating to what kinds of instructional materials are used in vocational institutions to teach adult basic skills and ESL are again based on several sources. Several contacts with and visits to vocational institutions occurred during this project. There were visits to three joint vocational schools and communications with three more. Additional visits were made to two adult skill centers and one community college. Finally, 2-day site visits occurred at a community college and a joint vocational school to collect information for case studies. A third case study of an adult skill center was developed from information obtained by mail and phone. These sites provided a range of settings upon which to base the following analysis. The workshop provided by Sharon Darling, Director of Kentucky State Adult Education, was also helpful. The ABE coordinator from a joint vocational school who served as consultant confirmed the general findings. For more detailed analysis of specific instructional materials used to teach adult basic skills and ESL, see the case studies presented in this document.

No unversal preference. There is considerable variety in the materials used at different vocational institutions to teach adult basic skills and ESL. Certain publishers like Steck-Vaughn, Cambridge, and New Reader's Press appear on materials lists more than others do, as one might expect, because these publishers specialize in functional literacy materials. But even so, instructors are sometimes sharply divided about methodology and hence which instructional materials work best to teach adult basic skills and ESL.

Nowhere does this difference of opinion seem more apparent than regarding ESL. Those who use New Reader's Press materials swear by the Laubach method that stresses phonics. On the other hand, those who believe that a conversational approach works best favor texts such as Addison-Wesley's *New Horizons in English* or Prentice-Hall's *Side by Side*.

Perhaps the closest to a universal preference that vocational education institutions reach regarding adult basic skill and ESL instructional materials is with Bell and Howell's Language Master cards. The Language Master machine appears to be a very popular basic skill teaching tool, offering instruction through more than one learning modality. But even so, not all vocational education institutions use this product.

Another possible reason why no universal preference exists regardng the use of adult basic skill and ESL materials in vocational education institutions relates to the range in price of the materials available, and the difference in local funding levels. In the state of Ohio for example, approximately 85 percent of state adult education money is allocated for instruction and 15 percent for administration and equipment. But how much money is spent on instructional materials locally can vary from ABE project to ABE project.

Exhibits 4, 5, and 6 illustrate how varied the materials for adult basic skill and ESL instruction at local vocational education institutions can be—even if all the institutions are joint vocational schools in the same state.

The question of whether a universal preference should be encouraged is soundly answered by the research conducted by Sharon Darling and the Jefferson County Public Schools in Louisville, Kentucky. Their research findings related to materials selection for literacy students show "that no one material shows significantly greater gains over another, but that the material used in the program derives strength from well-planned instructional design and a caring well-trained staff" (Helm et al. 1983, p. v).

Preference for several texts. As exhibits 4, 5, and 6 demonstrate, vocational education institutions use several texts to teach a given basic skill. Usually there is one core text for the adult basic skill or ESL course. Other texts are used to fill in gaps left by the core text, to provide additional practice, or to meet specific needs of individual students posed by their particular learning style or assessed skill deficiencies. The more attention paid to assessment of specific skill strengths and weaknesses, the more several kinds of materials tend to be used.

In addition to texts, programs like the Salt Lake Skills Center have found it useful to bring into class materials encountered in vocational training. Salt Lake Skills Center's second phase of adult basic skill training uses materials such as operating manuals, tables, charts, and custom-made activities to supplement texts.

This philosophy of some vocational education institutions is supported by other programs. Jefferson County Public Schools' literacy program staff have found it useful to bring into class materials encountered in daily life. With a focus on coping skills, the program reinforces adults'

EXHIBIT 4

OHIO HI-POINT JOINT VOCATIONAL SCHOOL
ABE INSTRUCTIONAL MATERIALS

Reading Materials

Title	Publisher
Dolch Sight Word List	
Sight Vocabulary (5 boxes of Language Master Cards)	Bell & Howell
Phonics Series (14 boxes of Language Master Cards)	Bell & Howell
The Sound Way to Easy Reading (records)	Bremmer-Davis Educational System
Directions I, II Phonics Analysis Learning Center (kit)	Steck-Vaughn
Scott-Foresman Books A-F	Scott-Foresman
Laubach workbooks	New Reader's Press
Adult Reader	Steck-Vaughn
Specifying Skills Series	Barnell-Loft
Adult Reading Kits I and II	Steck-Vaughn
Reading Attainment Kits I, II, III	Grolier

Mathematics

Title	Publisher
Laubach materials	New Reader's Press
Introduction to Mathematics	Cambridge
Mathematics in Daily Living	Steck-Vaughn
Succeeding In Mathematics	Steck-Vaughn
SRA Computational Skills Development Kit	Science Research Associates

Writing

Title	Publisher
Laubach materials	New Reader's Press
Improving Your Handwriting	Steck-Vaughn

EXHIBIT 4—Continued

Spelling

Title	Publisher
Dolch Sight Word List	
Spelltapes	Educational Progress Corporation
SRA Spelling Word Laboratory	Science Research Associates
Target: Spelling 180, 360, & 540	Steck-Vaughn
Alphaspell Computer	Centurion Industries

ESOL

Title	Publisher
ESOL Illustrations	Teacher-made
Skill Book I, II	New Reader's Press
Welcome to English, Books 1-6	English Language Services

Language

Title	Publisher
New Mastering Capitalization and Punctuation	Continental Press
New Mastering Good Usage	Continental Press
Introduction to English	Cambridge
Language Skills Books 610, 720, & 830	Steck-Vaughn

NOTE: Program staff at this school have made many of their own ESOL materials. For instance, they cut out pictures of foods, clothing, colors, and so forth from magazines and catalogues and glue them on cards. Then the English word is written below the picture. On the back of the card the corresponding word in the student's native tongue may be written. They have blank cards for the Language Master. On these cards they can write any English word the student is having a problem with or just a list of words the student needs to learn. The ABE coordinator says that "the Language Master is especially helpful in learning the accent as the student hears the word and immediately repeats it."

EXHIBIT 5

MUSKINGUM AREA JOINT VOCATIONAL SCHOOL DISTRICT
ABE INSTRUCTIONAL MATERIALS

Reading

Title	Publisher
Adult Reading Program 1100-1700	Steck-Vaughn
Learning 100 Program	EDL (Arista Corp.)
Phonics We Use A - G	Rand McNally
Working with Words series	Steck-Vaughn
Communications series	Follett
New Practice Readers	McGraw-Hill
"Go" Books	EDL
Reading Attainment	Grolier
Language Master Card sets	Bell & Howell
Word Clues	EDL
Controlled Reader series	EDL
Adult Reading Program 2100-2700	Steck-Vaughn
Reading Improvement Activities	Steck-Vaughn
Reading for Understanding	SRA
Reference Study Skills Kit	EDL

Math

Title	Publisher
Programmed Math for Adults 1-13	McGraw-Hill
Learning Skills: Arithmetic Series	McGraw-Hill
Steps to Mathematics 1 & 2	Steck-Vaughn
Math in Daily Living 1-4	Steck-Vaughn
Practical Math 1 & 2	Steck-Vaughn
Algebra	Steck-Vaughn

EXHIBIT 5—Continued

Writing

Title	Publisher
Learning Skills: Language Arts Series	McGraw-Hill
Using English	Steck-Vaughn
English Lessons for Adults 1-3	Harcourt, Brace
Language in Daily Living 1-4	Steck-Vaughn
English 2200, 2600, 3200	Harcourt, Brace
Spelling Steps 1-3	Steck-Vaughn
Spelling Kits	SRA
Spelling Demons	Prentice-Hall

NOTE: Speaking and listening as such are not stressed in this program. ESL is not included because the ESL population is minimal.

EXHIBIT 6

UPPER VALLEY JOINT VOCATIONAL SCHOOL
ABE INSTRUCTIONAL MATERIALS

Reading

Title	Publisher
Laubach Way to Reading	New Reader's Press
Read On!	Literacy Volunteers of America
Elementary and Secondary Series	Barnell, Loft
Adult Reading 1100 - 2800	Steck-Vaughn
Communication Series	Follett
Basic Reading One and Two	Steck-Vaughn
Cloze Connections Books A - I	Barnell, Loft
Adult Readings	Reader's Digest
Skill Builders	Reader's Digest
Novelettes	Pitman Learning

Supplemental Methods

sight words
language experience stories and charts
word patterning
structural analysis

Writing

Title	Publisher
Grammar, Mechanics, and Writing Kits	Continental Press
Learning Our Language Book 1 and 2	Steck-Vaughn
Language Exercise Series	Steck-Vaughn
G.E.D. Writing Skills Test (use part of this product)	Contemporary Books

EXHIBIT 6—Continued

ESL

Title	Publisher
Passage to ESL Literacy (with visuals)	Delta Systems
ESL Student Worksheets: Lessons 1-20 (with visuals)	Modulearn
ESL Student Worksheets: Lessons 21-40	Modulearn
New Horizons in English, 1-6 (texts, cassettes, and workbooks)	Addison-Wesley
Progressive Audio Lingual PAL Drills in English (with cassettes)	Regents
Tests and Drills in English Grammar (Books 1 and 2)	Regents
Exercises in English Conversation (Books 1 and 2)	Regents
A Conversation Book: English in Everyday Life (Books 1 and 2)	Prentice-Hall
Sign Language (with flashcards)	Janus
Supermarket Language	Janus
Medical Language	Janus
Language Skills Kit A (handouts) Units used: 1. "Alphabet Skills" 2. "Naming Words and Their Plurals" 3. "Is, Are, and Doing Words" 5. "Capitalization" 7. "Kinds of Sentences" 8. "Using Signals" (Punctuation) 9. "Writing Good Sentences" 10. "Writing Stories and Letters"	Continental Press
Preparation for Naturalization (Citizenship):	
M-161 *Our American Way of Life*	U.S. Government Printing Office
M-162 *Our United States*	U.S. Government Printing Office
M-163 *Our Government*	U.S. Government Printing Office
Federal Textbook on Citizenship: Our Constitution and Government	U.S. Government Printing Office

Science

Title	Publisher
This Is Your Body	New Reader's Press
Basic Science for Living (Books 1 and 2)	Steck-Vaughn

EXHIBIT 6—Continued

Films

Title	Publisher
The Human Body (All systems)	Time-Life Films
The Cells (set of 6)	GAMCO Industries. (Subsidiary of Siboney Corporation)
Nutrition (set of 6)	GAMCO Industries. (Subsidiary of Siboney Corporation)
Physical Science (set of 6)	Educational Enrichment Materials Company of the *New York Times*

Social Studies

Title	Publisher
Secondary Reading Kit	Barnell. Loft
Our American Constitution	Steck-Vaughn
Test 2 - The Social Studies Test	Contemporary Books

Math

Title	Publisher
Maps to *Whole Numbers. Fractions. Decimals. Algebra*	G & G Publishing Company
Number Power	Contemporary Books
Algebra 3	Contemporary Books
Working With Numbers (parts)	Steck-Vaughn
Adult Reading 2800 (Tables and Graphs)	Steck-Vaughn
The Mathematics Test	McGraw-Hill

NOTE: Upper Valley's ABE program. with a strong GED orientation. considers science to be as basic a skill as math or reading.

reading skills by using practical life materials such as newspaper want ads, telephone directories, and restaurant menus (Helm et al. 1983, p. v). Two teachers in Massachusetts have also experimented with alternative forms of literacy instruction. The students were primarily human service workers with inadequate communication skills for their jobs. In a later model, students themselves planned what "texts" they needed and wanted with faculty serving as facilitators. In all the experiments, the "texts" used were vocationally related items such as "regulations, manuals, handbooks, reports, and technical textbooks required by the students' jobs" (Shermand and Buchanon 1980, p. 41).

One may wonder how adult basic skill and ESL materials differ so as to influence decisions of vocational education institutions regarding which texts to use in supplementary fashion. Probably the decisions have a similar basis as those made by the Jefferson County Public Schools' literacy project. Were there an abundance of adult basic skill and ESL instructional materials that integrated basic skills and vocational education, additional considerations would be reflected. At any rate, the assessment of commercially prepared reading materials by Helm and others (1983, pp. 1-25) calls attention to several ways in which adult basic skill and ESL texts differ, thus influencing their use as a supplement. Those differences include—

- range and difficulty of reading level,
- orientation (individual vs. group learning),
- interest level,
- range and type of skills covered,
- repetition/reinforcement of learning,
- methodological emphasis,
- learning modality,
- teacher guidance,
- length of lessons and activities,
- sequence and structure of the learning program,
- directions,
- introductory material,
- vocabulary,
- built-in placement instruments,
- answer keys,
- testing and review mechanisms,
- format,

- consumability of materials,
- management of learning (student-centered vs. teacher-directed).

The large number and diversity of potential areas of difference among adult basic skill and ESL instructional materials dramatize the need for a range of supplementary products to facilitate meeting individual remediation needs.

Comparison of the reliance upon commercial materials and teacher-made materials. Vocational education institutions use both commercial and teacher-made materials to teach adult basic skills and ESL. The more severe the adult basic skill needs, the more the tendency is to rely on commercial materials. Jefferson County Public Schools' literacy project shares this experience with vocational institutions. Helm and others have noted that for illiterate adults the "use of commercially prepared materials as a curriculum ensures a logical sequence of skill development" (ibid., p. v).

Across the board, however, a prevalence of commercial materials in adult basic skill and ESL programs at vocational education institutions largely depends upon the availability of funds. Community colleges have a different funding base than joint vocational schools. This funding base allows community colleges to support adult basic skills through both continuing and developmental education plus other special projects (see the case study on Triton College). Columbus Technical Institute successfully contracted for remaining CETA funds in 1983. With at least $60,000 available, this post-secondary vocational institution was able to purchase two sets each of HBJ Media Systems' *AVT Learning System* in math and reading for a basic skill project that benefited CETA clients.

Finances are not the only consideration, however. As instructors become more experienced, they tend to adapt bits and pieces of curriculum from several sources to customize the adult student's remediation. Also, some instructors find that homemade tactile/kinesthetic materials work very well and are less expensive than many commercial products. Exhibit 4 notes that Ohio Hi-Point Joint Vocational School staff members have made many of their own ESL materials. Salt Lake Skills Center staff find much commercial material too juvenile for adults. For this reason, they use vocationally oriented modules and activities developed by their instructors as much as possible to increase adult basic skills in the phase accompanying vocational training. At Upper Valley Joint Vocational School, adults are encouraged through the language experience method to make their own books to read. Also, Upper Valley's ABE coordinator says that beans are very useful to teach the multiplication tables.

Comparison of the use of print materials and other media. Print materials predominate in adult basic skill and ESL programs within vocational education institutions, in part because they're abundant, in part because they're the traditional form of instructional materials, and in part because they're generally viewed as less expensive. Few if any classes, however, rely solely on print materials. Audiovisual and computer packages offer valuable instructional alternatives. In a short period of time a large number of computer basic skill materials have become available. The mystique of computers can make basic skill software appealing to adults, apparently, regardless of the intended audience. In fact, some computer software catalogs do not specify an age level for their products, or say "for any age."

The ABE coordinator at Ashtabula County Joint Vocational School views the use of multimedia as one of the most important teaching approaches. She has been very successful in presenting basic math to adults through video, computers, and Monroe's calculator program *Classmate 88*. She is quick to say, however, that "the most important thing is the teacher." For that reason,

she stops short of insisting that one of her adult basic skill instructors (who prefers the more traditional approach of print materials) switch to media.

Salt Lake Skills Center uses Control Data's basic skill program on the PLATO Network to bring adults' math skills up to the level for entering vocational training—but not exclusively. PLATO has distinct advantages over print materials for achieving an individualized tutorial program. The adult learner gets as much practice and review as necessary with instant and patient feedback. Interestingly, however, neither Salt Lake or Ashtabula County JVS staff view computerized programs as teacher free.

Triton College's Learning Assistance Center (developmental education) and Independent Learning Laboratory (continuing education) both make available a mix of mediated and print materials. In the Independent Learning Center, videotapes of instruction are popular with students. In the Learning Assistance Center, however, it's a different situation with students enrolled in vocational courses. Sound-tape programs (HBJ Media Systems *AVT Learning System*) go unused for the most part. A tutor remarked that after three or four sessions, the adults were found not working. Some tapes had insufficient explanations and adults couldn't concentrate. Software programs are more popular. From observation and discussion, however, it seems that print materials are used the most.

Why the dichotomy? Perhaps the different skill level explains why ABE students in continuing education use mediated materials more than enrolled students, but that's not necessarily the case. Adults with diplomas sometimes have been enrolled at Triton who later were found to need considerable basic skill remediation. Perhaps the emphasis on tutors is the answer. Tutors, on a one-to-one basis, get adult clients talking about what is unclear to them in a writing assignment, for example. Then, the adult clients write a spoken correction, go over the assignment with tutors, and proofread and read their writing aloud to tutors, who provide a receptive audience. Gradually, tutors make the clients work more and more independently as skills and confidence increase. The skills of speaking, listening, and writing are so interwoven that it is perhaps not surprising that clients prefer the one-on-one with tutors. For some skills like math, vocabulary drill, or spelling practice, working alone may be more comfortable. The abundance of adult basic skill tutors at Triton College appears to be an enviable asset. Where tutors aren't available, programs may turn to media to assist individualized, self-paced efforts.

The only vocational institution contacted that used mediated materials predominantly in an adult basic skill program was Columbus Technical Institute (CTI). For its CETA-sponsored project in 1983, CTI used HBJ Media System's *AVT Learning System* exclusively with very positive results. This program is multimedia and includes workbooks that accompany individualized lessons that are slide-tape presentations.

For disadvantaged young adults, CTI staff view this product as effective in fighting an attrition problem. The young adults, sitting with earphones at individual carrels, worked at their own pace in an environment free of competition. They could repeat material covered by the slide-tape at will. A facilitator did admit, however, that this learning approach could be so intense for some persons that newspaper exercises were offered to get students away from the screen and earphones for a while. As to the expense, a CTI administrator does not view the *AVT Learning System* as expensive if used repeatedly over time.

In conclusion, there appears to be wide diversity among vocational education institutions in the use of print materials versus other media. Factors that determine the success of any approach may well include—

- appropriateness of the instructional content in the material for the learning goal,
- type of learning environment provided,
- ease of accessing the material,
- degree of comfort with the materials felt by the instructor and student,
- motivation of the adult student,
- nature of the skill being taught.

No doubt print materials will continue to be widely used in vocational education institutions to teach adult basic skills and ESL. But as funds allow and popularity with adults continues, computerized materials may become increasingly used. They offer individualized, self-paced drill and practice without boring the user and have built-in, frequent feedback—two essential ingredients for effective adult basic skill and ESL instruction. Positive interaction with a live instructor, tutor, or facilitator is still crucial to learning, however, especially in regard to communication skills.

McCullough (1981), in his analysis of a survey to determine how much multimedia are used in ABE, also found commercial print materials and teacher-made materials used much more. He assesses the importance of personal interaction as follows:

> ABE teachers must be highly adaptable individuals, being able to seize upon the many teachable moments that arise within the learning process. Simultaneously they must be aware of the very delicate commitment most learners have to the idea of learning and being helped to learn.
>
> Hardware and "canned" programs are impersonal. They cannot make learners believe in themselves, adapt to the unique personal needs of the learner, or develop personal regard and friendship for the learners. And even though developing basic knowledge and skills is the only measurable mission of ABE, perhaps what is ABE's most important mission is rebuilding and strengthening—even restoring—the many human psyches that have been "weighed" in the biblical sense, and have "been found wanting." It is a dual, difficult mission, one which cannot be fairly evaluated if the only criteria used are reading gains, or numbers of people who have completed certain content areas, or any one of a dozen other ways programs can be quantitatively measured. And it is also a delicate mission, depending heavily on compatibility and sensitivity of personalities. (p. 69)

The instructional strategies used in vocational education institutions to accomplish this "difficult mission" are discussed in the next section.

Strategies Used to Teach Adult Basic Skills and ESL in Vocational Institutions

McCullough (1981) explains the origin of strategies used by adult basic skill instructors in the following way:

> Adult basic education, like some other educational programs, does not have its own specific learning theory. What has appeared workable in theory has been adapted and adopted by ABE instructors, and what has emerged is an eclectic body of theory loosely

called adult learning theory. A good example is J. Roby Kidd's book, *How Adults Learn*, which Kidd, himself, would not describe as a theory-generating book. Adult basic education is a field of practice, not a field of research, encompassing an array of strategies gathered from theories found most applicable to adults. (p. 66)

Not all adult educators may agree with McCullough. As adult basic education has evolved, sophisticated programs have begun to emerge. Nevertheless, the scope of ABE is broad, and often programs are grass roots in origin.

Elsewhere, McCullough writes that an adult basic skill instructor's personal qualities are more important than academic or technical competence.

> They [adult basic skill instructors] are nearer to counselors as a profession than they are to stereotypical classroom teachers. Their relationship to the learner is a predominately helping one and their expertise is more in process than in content. They must be able to analyze the articulated goals of learners (what learners *want* to achieve) and determine what learners *need* to reach their goals. Instructors must be able to develop specific objectives for each need, create instructional sequences for each objective, and help learners through the sequences with efficient learning strategies. . . . Simultaneously, they must also assess and reassess each step of the process, and constantly strive to maintain the morale and perseverance of each person involved. (p. 60)

In many ways the characteristics of adult basic skill students help to explain why certain learning strategies are used in vocational education institutions and what makes them efficient to use. One must make an exception with the recent influx of dislocated workers into ABE classes. Otherwise, one key feature of many adult basic skill students recognized some time ago is that they typically are disadvantaged—educationally if not culturally, socially, and economically. One might also add *physically*, as this population frequently suffers from undiagnosed physical ailments. Dental, visual, and hearing problems and/or learning disabilities are the most common physical impairments and help to explain why previous educational efforts were aborted or unsuccessful. Chronic diseases that frequently debilitate adult basic skill students are tuberculosis, venereal disease, malnutrition, skin conditions, and disease of the gums (Ulmer 1969). Many of these physical problems afflict refugees to this country, too.

When one takes these physical barriers to learning into account, it seems quite remarkable that these students are motivated to try again. Indeed, adult basic skill and ESL students are usually highly motivated but can become easily frustrated. Therefore, it is important that adult basic skill and ESL instructors recognize the advantages and disadvantages of being an adult student and play to the strengths in the instructional strategies used.

Ulmer (1969, pp. 8-11, 19-23) outlines the strengths and weaknesses that adult basic skill students pose. Perhaps the greatest barriers outside of physical problems are the anxiety and lack of confidence that these adults feel toward classroom learning. Such anxiety may be reinforced by the myth that you can't teach old dogs new tricks. Admittedly, there commonly is a resistance in adults to change, but it is more of a psychological nature than biological. Also, until disadvantaged adults have time to adjust, mental learning activities may seem more difficult than they really are because these adults are typically accustomed to physical work, be it housework or digging ditches. In older adults, the reaction time may be slower, demanding more time for synthesis and analysis tasks.

Years of discouragement may serve to limit these adults' educational goals. An individual who is uprooted from a laborer's job held for 15 years may have a hard time thinking of another job for which to retrain. Others may seek only the immediate goal of passing the GED. Those who attend adult basic skill or ESL classes at a vocational education institution, however—especially a community college—tend to have a vocational training goal in mind.

Some uneducated persons tend to move in a group that reinforces and condones failure in the middle-class sense. Views that education might shape and expand the individual may be influenced by bias and superstition. Neither abstract ideas nor abstract ideals may hold any allure. For these individuals, learning experiences may need to have immediate usefulness.

Despite these disadvantages, adult basic skill students bring some powerful assets to the learning situation. These adults have been educated by experience. Accumulated practical knowledge may even outweigh that of an instructor who is younger. Furthermore, these adults know why they're studying basic skills or ESL. They have come voluntarily or out of necessity and can usually compensate for any limitations by the following strengths: singlemindedness of purpose, self-control, endurance, and the ability to pace oneself and use efficiently one's resources.

Characteristics of immigrants and refugees also help to explain the learning strategies used in vocational education ESL classes. Many of the same strategies of adult basic skill instruction apply to ESL. The students of each group are not that dissimilar. Many refugees, especially Southeast Asians of the more recent wave in the 1980s, to the United States are also disadvantaged, in this case uneducated rural villagers with hardly any contact with Western civilization. There are the same problems of self-concept, anxiety, age, and health. And many strengths are the same such as motivation, practical experience, self-control, endurance, and single-mindedness of purpose.

The major difference is not cultural—the relocation camps orient refugees to many features of Western culture. The major difference is quite possibly that many refugees are nonliterate or non-Roman alphabetic literates. That is, they possess no reading and writing skills in any language (nonliterate) or are fully literate in their own language, but need to learn the shapes of the Roman alphabet. Teaching English to these groups is very different from teaching a native English speaker. As Burtoff and others (1983, p. 30) point out, native English speakers have six distinct advantages: (1) familiarity with English sounds that make words, (2) control of the vocabulary that forms sentences, (3) ability to form sentences correctly because of a knowledge of English structure/grammar, (4) control of the social appropriateness of English usage, (5) ability to speak English, and (6) ability to understand spoken English. Unfortunately, as Burtoff and others observe, very few commercial materials are available to teach ESL to refugees. Instructors and tutors can't rely on literacy materials designed for native English speakers without first adapting them adequately.

The following sections highlight the common strategies that are advocated by vocational education institutions to teach both adult basic skills and ESL. In responding to the list, Holthaus (the ABE coordinator who served as consultant) stresses that the instructor must have these priorities: first, be a friend; second, be a counselor; and third, be a teacher. "The instructor," she says, "must empathize with each adult student, believe in the good and potential in everyone, draw on experiences that the adult student will understand, become aware of individual problems, and address them before attempting instruction."

Individualize. The most important strategy in teaching adult basic skills and ESL is individualizing. To individualize instruction is to do a variety of things. It can mean, first of all, designing lessons to meet each student's stated goal. It can mean providing for learning to be self-paced. Self-paced instruction means that the timing of learning is flexible. The adult student determines when

to learn and the duration of study. The student is in charge of the subject studied, as well as the correction and grading of exercises. In other words, adult students retain the ultimate decision-making responsibility for their own education.

The instructor acts as a resource person and a directive guide within the educational environment, providing small, short steps so as not to frustrate the student. Direct access and continuous contact with students enhance this process.

Individualizing learning does call for structure, however. Testing at the completion of vital skill areas is most important to the instructor's management of the process. Accurate record keeping by both instructor and student is necessary. Instructors give some type of written guideline for each individual student to follow to note direction and progress. Continual conferences occur to update, teach, and guide the student. These conferences are informal. During study times, the instructor indicates availability by walking around the classroom, passing near each student.

Individualizing instruction means flexibility of the beginning and ending of study time and entry/exit for the program. When group instruction is offered, it is optional for the student to participate. Whenever possible, volunteer, trained tutors can be a tremendous help to the student who is struggling and finding it hard to study a particular area independently.

Use performance-based processes. It is sometimes hard to say who is helped more by the presence of behavioral objectives—the teacher or the student. No doubt they can help reinforce the purpose of a given learning experience. The important thing instructors must remember is that it's not enough for objectives to be printed in the text. Too often students don't read printed objectives, so it helps to go over objectives orally with them. Further, objectives need to be explained to adult students so they know how the objectives will help them meet individual goals. Instructors then need to reiterate objectives and their rationales during subsequent conferences as needed. Also, measurable terms may need adjustment to ensure mastery for different individuals.

Review and reinforce. For each student, planned review and reinforcement of skills must be built in to the individual's educational plan. This procedure aids students in maintaining their mastery level until a particular program goal is reached. Review and reinforcement also help students maintain the confidence necessary to attain program goals.

Give pre- and posttests. Usually upon entry into a remedial program, adults are tested (based on stated goals) to determine their entry level and educational needs to meet their stated goals. Reading-level information is necessary for all adult basic skill and ESL preparation. Other basic skills vary in importance to particular vocational training areas, but math skills are vital to most technical training.

Pretests can be standardized or sometimes instructor designed. It is possible, for example, to determine informally whether a student is a reader or a nonreader. Care must be taken with pretests so as not to reinforce failure.

Posttests are often available commercially to be used at the end of a certain text. It is also important, however, that the instructor build in some testing after completion of certain intermediate tasks. This procedure allows for quick intervention by the instructor when a problem of skill mastery first appears. It also aids in the development of the students' confidence as they complete tasks and move on to more difficult ones. Textbook posttests act then as a review and capsulating instrument for a holistic view of the student's mastery of skills.

The posttest or mastery test is taken by students at their choice. Sometimes the instructor may encourage the decision, but teacher or group pressure should never force it. To be consistent with self-pacing, instructors do not build time limits into the program for attaining mastery of a certain skill. When students can demonstrate mastery of a certain skill, they move to the next higher skill or a new skill area.

Gear for success. It is imperative that students have opportunities for built-in success experiences. For this reason, adult basic skill and ESL instructors start with review of a fairly well known skill before moving to a more difficult one. They also plan instruction in many short units rather than a few long ones.

Another way to carry out this strategy is in handling reading levels. When teaching a new or undeveloped basic skill, instructors lower the difficulty in instructional material at least two reading levels and gradually build. They can also read directions aloud so that students don't have to rely on reading them.

Instructors can also gear tests for success. First of all, students request a test or quiz when they feel competent to take it. If a student doesn't pass a test, instructors can excuse the student from sections that were completed satisfactorily. Students then review only problem areas with or without instructor assistance before retesting. The key here is to minimize mistakes and accent the positive.

Be relevant. Adults dislike busywork. A sensitive instructor of adult basic skills or ESL devises ways to vary practice drills when learning requires them. At the same time, it is well established that the most efficient learning takes place when an immediate need is felt. Adult basic skill and ESL instructors plan class work in terms of immediate needs.

Individualizing instruction is one way to allow immediate needs to be met. The content of instruction is another. A story on coping with divorce does not necessarily apply to all students. Buying lumber to build a fence probably doesn't either. Unless the adult basic skill or ESL training program is a prerequisite or concurrent program devised for a specific vocational audience, it may seem impossible, however, to achieve total relevance in instructional content.

The dearth of instructional materials that integrate basic skills with specific vocational areas makes this predicament all too clear. At least for problem areas and coping skills, however, instructors can furnish relevant reading topics, math thought problems, or conversational practice

Address learning styles. Because of recent research, directing education to a student's particular learning style preference is taking on new significance. Addressing learning styles may be as simple as allowing students to smoke or drink coffee while they work in class. It may also entail offering various teaching modes such as working in pairs or groups on projects versus independent discovery.

Aside from environmental factors, instructors also address learning style by providing for different ways in which people process information. Traditional education relies largely on auditory processing of information. Instructors of adult basic skills and ESL are beginning to incorporate more creativity by emphasizing other senses in learning whenever possible. Using Language Master Cards is one example. With the advent of computer instruction, tactile experiences are much more feasible than before. Addressing learning style is showing remarkable results, maintains the ABE coordinator of Upper Valley JVS, with students who were unable to grasp certain skills by traditional means.

Selection Criteria

Given the range of learning needs that adult basic skill and ESL students pose and limited funds for purchasing materials, selection criteria are an important consideration. Ulmer and Dorland (1981) have described how the current situation differs from the early 1960s when materials for teaching illiterate adults were practically nonexistent. They write that "since the late 1960's, the situation has reversed itself to the degree that teachers now need assistance in evaluating materials for use in specific locations and for specific audiences" (p. 14). They add that "as teachers become full-time professionals, the curriculum of literacy education will become increasingly sophisticated" (p. 20).

The following discussion outlines what the literature search and site visits revealed regarding the process of selecting materials for adult basic skill and ESL instruction. It concludes with a compendium of sample criteria and an ABE coordinator's list of selection process tips.

Selection discussed in the literature. In an earlier writing, Ulmer (1969) makes an observation that can well serve as a guiding principle for selection of adult basic skill and ESL instructional materials.

> Everything known about the goals of adult education, as well as the goals of the adult student, has implications for the selection of teaching materials. The goals of adult education, for instance, dictate that a wide range of subject matter must be taught through the materials students use to learn basic skills. What is known about the undereducated adult suggests that the material must be practical, relevant to here-and-now situations, and suited to individual interests and abilities. (p. 39)

Ulmer discusses, then, several issues to consider in selecting instructional materials. He notes that this responsibility requires "a substantial investment of knowledge, patience, and time on the part of the teacher" (p. 39). Materials can include formal teaching tools such as workbooks and teaching machines, but they can also be *realia*—impromptu devices and objects like tax forms and measuring cups. Ulmer believes that the most logical way to choose materials, perhaps, is to look first at available materials for purchase, choose the best, and then complement them with materials prepared or collected by the instructor. He adds that "total reliance on commercial materials will hardly ever be the best course" (p. 40).

Elsewhere the *Training Manual for ABE/GED Teachers: Entry Level* edited by Goodman (1981) advises that instructors be alert to new materials at one's literacy center and in the community. Instructors should also ask their director or coordinator about materials. In the process, it is important to note who the publishers of adult basic skill and ESL materials are.

One can write publishers to request examination copies and/or current instructional materials catalogs. In writing publishers, one should be sure to state the purpose for the materials and stipulate adult basic skills and/or ESL materials. It may be possible to collaborate with colleagues in this effort. One can also check ERIC for current articles and bibliographies that recommend materials.

Training Manual provides a teacher's checklist for evaluating materials. The 14 evaluation questions, compiled by Joy Choens, appear in exhibit 7.

EXHIBIT 7

TEACHER'S CHECKLIST FOR EVALUATING MATERIALS

1. Is consideration given to the characteristics and background of the student who is to use the material?

2. Is the purpose for which the material is to be used identified?

3. Are subject matter materials and learning activities acceptable in terms of youth and/or adult interest levels?

4. Will materials encourage individual reading, speaking, writing, study, or application of the individual's daily activities?

5. Will the material raise the student's self-esteem and help him or her gain insight into his or her self-image?

6. Is the language adult in tone and structured in such a way that maximum readability is obtained?

7. Are sentences written in the familiar vernacular with ample use of strong verbs and personal reference words?

8. Does the material have built-in reasoning and evaluation devices to help the learner and teacher determine progress?

9. Are the directions simple and clear so that the learner can follow them with little difficulty?

10. Does the design of the system allow for maximum progress according to the ability of the individual?

11. Does the material depict real-life situations?

12. Does each lesson teach a simple concept or a small number of related concepts thoroughly?

13. Are the skills and concepts taught in a logical sequential order? Can the student easily understand this logical order?

14. Are the materials inexpensive and/or consumable? Are they of good quality? Are they readily available when needed? (Ibid., p. 69)

Helm and others (1983) recommend criteria for selecting reading materials for adult students. They suggest that three questions be asked:

- Who will read the material? (i.e., how well, what interests, what needs)
- What is the purpose of the material? (basic text vs. supplement, student centered vs. teacher assisted, informational vs. entertaining)
- Does the material fit the readers and purposes?

The following criteria by Helm and others are intended to answer the last question:

1. The readability level (or level of difficulty) should be appropriate for the perspective students.
2. It should be paced to increase 1 level for each 50-100 hours of specific reading instruction.
3. Goals for each lesson should be clear, practical, and attainable.
4. Lessons should teach one or two concepts only, but teach them thoroughly.
5. Materials should be well organized, with skills and concepts presented in a logical sequential order.
6. Lessons should provide for review and reinforcement of skills already taught.
7. Information should be accurate, complete, and current.
8. Subject matter and learning activities should be familiar and interesting. (Suggested adult interest areas include: consumer education, career education, health, family life, parenting skills, government and law, and community resources.)
9. Content should include representation of a variety of groups of people and show respect for diverse cultures and values.
10. Materials should motivate and encourage independent reading, writing, and other study.
11. Writing should be nonpatronizing and adult in tone, if not in vocabulary.
12. Sentence patterns should be similar to those used by adults in all communication
13. Visual illustrations should be clear and relevant.
14. Appearance of books should be attractive and suitable for adults (pp. 33-34)

Additional selection factors mentioned by Helm and others are "durability of materials, consumable or reusable nature of materials, quality of teachers manuals, provision of pre- and posttests, and cost" (p. 34).

Ball (1979) has written about materials selection for ABE programs. His model for selecting instructional materials has five features. It—

- is systematic,
- considers adult learner behavior,
- suggests how to achieve maximum effectiveness and efficiency,
- includes a wide range of criteria,
- uses relationships among levels of sophistication, proficiency, types of learning, and appropriate media use as a foundation.

Forty-seven criteria providing an explicit selection guide are grouped under the following seven categories:

1. **Goal and objective oriented**—The content of the material relates to the implicit or explicit stated goals and/or objectives.
2. **Objectivity**—The content presents information in a fair and impartial way. It does not favor one aspect, event, issue, or group over another.
3. **Promotes understanding**—Content presents other people, places, and things without negative undertones.
4. **Level of sophistication**—The material seems suitable for the entry levels and competencies of those adult learners for whom the presentation is to be directed.
5. **Validation**—A listing of other sources and agencies that assessed the material, and with what results.
6. **Design variables**—The methods by which the content of the material is organized and developed, in terms of the use of language and visual elements, technical clarity, production techniques, etc.
7. **Personal assessment**—The personal and professional judgments of YOU, the instructor or involved educator. (Ball 1979, pp. 265-268)

Ball also offers possible explanations for adult learner rejection of instructional material. One can ask the following questions before deciding that the material won't work:

- Did the student have a fair chance to see or hear the product?
- How well was the product presented or displayed?
- Was the method of approach unsatisfactory?
- Was the learner informed of the purpose for using the product or why a specific approach was used?
- Of adult diverse needs, which does this instructional option adequately meet?

Selection discussed on site visits. The materials selection process is similar at both sites that staff visited. At Ashtabula County JVS, the ABE coordinator asks staff members to preview materials. These materials are obtained via the catalogs that publishers send her. Of the basic skill instructor, the vocational instructor, and the ABE coordinator, the latter two have the greater say in determining purchases. Another phase of the selection process is attending statewide adult education inservice programs where texts are on display.

At Triton College, it takes about 1 year to get a new adult basic education text into the system. Publishers send complimentary texts to the GED/basic skills coordinator. Networking as to what's new and effective is accomplished both by the coordinator and her instructors by attending conferences and talking to other instructors. As soon as a new text arrives for review, the coordinator gets it into the hands of instructors. One instructor is asked to try out the text with students. Student reactions are sought.

The GED/basic skills coordinator sees no need to formalize the selection process. In brainstorming criteria with some of her instructors, the following concerns were mentioned:

- Relevance to the GED test or to a student's problem solving
- Adult in tone, including humor
- Avoidance of trivia
- Effective use of white space
- Self-checking with explanations of mistakes
- Well-organized rules with boxing or some identification for references
- Appropriate reading level
- Bold type devices (10- or 12-point type with serif preferred)
- Structured enough to be effective

Compendium of sample criteria. A product of research completed on this project (with input from the panel of experts) is the following compendium. As one of the panel of experts remarked, probably no text exists that meets all these criteria. Yet each of these criteria seems both reasonable and desirable. Perhaps by communicating the strengths and gaps in commercial offerings, adult basic skill and ESL instructors and coordinators can help publishers achieve more sophisticated and effective instructional materials.

Basic skills and ESL instructional material to prepare an adult to enter vocational training should have the following characteristics:

- **Be practical**
  - — Be easily accessible (either from the publisher or outside consultants or trainers)
  - — Be reasonably priced considering the scope of instruction
  - — Have credibility based on professional recommendation, reviews, testing, and reputation of the author and/or publisher

- **Be methodologically sound**
  - — Provide for or be adaptable to individualized instruction
  - — Provide for group activities where appropriate
  - — Include a variety of instructional experiences
  - — Display a logical sequence within and among learning experiences
  - — Reflect one or more accepted basic skill teaching strategies (e.g., phonics, language experience)
  - — Be well paced (e.g., contain a balance between practice exercises and introduction of new content and between achievement opportunity and task challenge)
  - — Be suitable for independent use (e.g., self-correcting, easily handled, self-paced, and in short segments with the directions clearly stated)
  - — Provide for periodic appropriate review, evaluation, and feedback regarding progress with the standard for successful completion indicated
  - — Allow the use of supplementary materials for students progressing slowly or quickly
  - — Encourage further application, study, and growth of basic skills
- **Be relevant to vocational training**
  - — Help prepare the adult to cope with vocational training by teaching one or more basic skills identified as necessary for adults to enter vocational training, and
  - — Design adult basic skill instruction so that it pertains or is applicable to a vocational training frame of reference by teaching specific information.
- **Be well written**
  - — Contain a readability level that remains constant or increases at a gradual rate throughout the text
  - — Have a reading level appropriate to the reading level of the individual's need
  - — State the reading level and reading scale used
  - — Contain content that matches the interests, background, and maturity level of adults
  - — State and fulfill goals and objectives within the content at appropriate places
  - — Display a clear organization of content
  - — Contain well-developed concepts
  - — Use a direct sentence structure with active rather than passive verbs
  - — Contain accurate, up-to-date content
  - — Contain clearly marked pre- and posttests
  - — Use language that is sensitive to different cultural backgrounds (e.g., clarify meaning, avoid slang and an excess of idioms, indicate correct social usage and language style)
  - — Identify clearly the major points of understanding

- Present information in an objective and impartial way
- Be consistent (e.g., vocabulary, instruction, and content)
- Bridge the gap between the abstract and the concrete

- **Be well designed**

- Be formatted appropriately for adults
- Be constructed so that the cover doesn't soil easily and the spine doesn't break easily
- Have print that is easy to read on paper that is clean
- Be well illustrated (e.g., sufficient, compatible, and appealing)
- Use cues to assist the reader in identifying important aspects of the content
- Be free of labels or marks that state a particular grade level so as not to offend

- **Be people oriented**

- Promote understanding, respect, and acceptance of others (avoiding regional, religious, sexual, age, and class bias)
- Provide for learner and instructor interaction before, during, and after a learning experience
- Provide for a broad range of interests
- Provide for or be adaptable to different learning styles
- Provide for or be adaptable to different teaching styles

Selection process tips. The ABE coordinator from Upper Valley JVS who served as consultant drafted the following list of selection process tips. They reflect classroom reality with an emphasis on practical concerns.

1. Know the skill you wish to teach and make sure that the text you choose does in fact teach that skill.

2. Does the text give simple, clear, and precise directions for each step?

3. Is the reading level as low as it can be for the skill being taught? Note that in some cases the reading level just cannot be adjusted down. When it can't, one can handle directions, verbally for example, rather than ask the student to read them.

4. Always keep in mind that with commercially prepared material, reading levels and students' "tested abilities" do not always match.

5. Can the student read and comprehend the directions as given in the text?

6. Are there pictures, examples, and diagrams that help? Those who can't read well may still be able to follow if these are supplied in the text.

7. Are the books attractive and do they keep students' interest? Materials should not be overcrowded; avoid cheap paper and poor print that is dulled out; look for color on the pages as well as white spaces.

8. Are the pages crowded or are there some "white" spaces?

9. What about print size? This is important, especially for adults who suffer from eye difficulties, and there are many. Too often, the higher the reading level, the smaller the print size.

10. Are the skills taught in short sequential segments? Is there enough practice for each skill? What about quizzes? A quiz over each task is preferable to just one quiz over the whole text. Are keys available for students who wish to check their work as they progress? Immediate feedback is important. Cheating is not so frequent in classes made up of self-motivated, goal-oriented adults as in traditional classrooms of young students.

11. Is the cost of an individual text or series reasonable? It is expensive to jump from one series to another. Instructors should probably choose a good series over a single book with a high cost.

12. Does the book try to cover too much information? A series of booklets is preferable for students, but cost often dictates publication of books that are over 1/2-inch thick. The density of learning (meaning the scope of work) should not be intimidating, nor should the format of the learning material.

13. When samples arrive from commercial publishers (whether requested or just sent), share them with staff and students to determine possible value of them to your program.

Linkage through Instruction

In conclusion, it is apparent that more commercial adult basic skill and ESL instructional materials are needed to facilitate linkage between adult basic skills and vocational training. Perhaps publishers are uncertain when the linkage is most appropriate, as well as how much and what kind of vocational educational context is feasible to include.

Meanwhile, institutions do find it possible, nevertheless, to effect this linkage through various means. Instructors find that providing a vocational context for activities that corresponds to a student's goals is a way to gear a learning experience for success. It is also a way of making the instruction relevant for the learner. At least three practices contribute to the linkage found during this study.

First, instructors develop their own instructional materials and activities, as at Salt Lake Skills Center, that provide a vocational education context. Second, basic skill and vocational education instructors work collaboratively, as at Ashtabula County JVS, to plan lessons and share collaboratively in planning lessons and share information and techniques with each other at the prompting of the ABE/VOED coordinator. Third, selection of instruction can be a joint effort, as at Triton College, where tutors in the Learning Assistance Center confer with vocational instructors in choosing appropriate materials.

The success of all these efforts may lie largely at the administrative level where vocational and ABE/ESL coordinators and administrators set the pace by demonstrating a commitment to linkage by their cooperation and active communication with each other. Chapter 4 provides a more detailed look at these three institutions through case-study analysis.

CHAPTER 4

THREE ILLUSTRATIONS OF LINKAGE

In order to provide a real-world view of how adult vocational training institutions assist adults with basic skill deficiencies, three institutions were selected as case studies. The institutions were selected on the following criteria:

1. They represented contrasting adult training settings (i.e., a community college, a joint area vocational school, and an adult skill center).

2. They had a commitment to providing basic skill training to facilitate entry into vocational training.

3. The program commitment was in operation for at least 2 years or more.

The institutions were (1) Ashtabula County Joint Vocational School, Jefferson, Ohio; (2) Triton College, River Grove, Illinois; and (3) Salt Lake Skills Center, Salt Lake City, Utah. Case-study field visits were made to two of the institutions. The third case-study, Salt Lake Skills Center, was conducted by reviewing materials by mail and telephone interviews with staff.

A structured common information format was used to obtain data from each institution. The format was designed to obtain data in four categories:

1. Demographic and descriptive information about the institution (i.e., description of setting, students, faculty, and vocational programs)

2. How basic skill requirements are determined for entry into vocational programs

3. How students' basic skills are assessed

4. Basic skill instructional procedures and materials

Models Used for Implementing Basic Skill Instruction

Prior to presenting each case study, it might be helpful to review alternative models for implementing basic skill instruction linked to vocational education and to discuss their use at the three field sites.

A report in 1983 by Campbell-Thrane and others concluded that three models for delivering basic skills instruction in conjunction with vocational education exist. These models are integrated, nonintegrated, and combination approaches. Their definitions follow:

- **Integrated**—An effort to infuse basic skill instruction into the vocational classroom wherever appropriate to the vocation and the needs of the students. Vocational teachers identify basic skills requirements for their career areas and teach these skills in conjunction with the vocational content.

- **Nonintegrated**—A fairly traditional model with basic skills instruction being conducted in a classroom setting separate from vocational training. Responsibility for basic skills instruction rests with subject matter specialists rather than vocational teachers.

- **Combination**—A blend of elements of the integrated and nonintegrated models, chosen to meet the educational needs and resources of the particular school district. It varies with administrative structure, budget, and other pertinent considerations.

Each of these models has certain advantages and disadvantages. Campbell-Thrane and others outline a comparison of the three models as follows:

- The integrated model is generally more advantageous than the nonintegrated in terms of organization, facilities, and cost because vocational instructors teach basic skills to students in their classes. Additional inservice training for vocational teachers is often needed, but not extra teachers, space, or rooms. The advantages of the integrated program are distinctly greater for students, their families, and the community because basic skill instruction is job relevant and because more students receive instruction.

- The major advantages of a nonintegrated program are likely to be experienced by teachers and administrators. This program results in the least structural change to the regular classroom and requires no extra responsibilities to be assumed by regular classroom teachers.

- The greatest disadvantages of the integrated model are—

  — the reduced time that vocational teachers have available to devote to vocational content;

  — the need for vocational teachers to attend to both the vocational and the basic skill needs of students who have varying levels of basic skills;

  — the fact that linking basic skill education and vocational requirements may result in lower skill transferability than in more generic programs, and that seriously deficient students may not have enough time to catch up in terms of basic skills.

- The major disadvantages of the nonintegrated program are—

  — decreased vocational relevance of basic skill instruction for individual students,

  — increased scheduling problems,

  — additional space and personnel costs,

  — the fact that "pull-out" instruction causes students to miss other instruction taking place in the regular classroom during their absence.

- The advantages and disadvantages of the combination model depend entirely on the elements chosen to make up the program. However, this model has great potential for being successful on a local basis simply because it is tailored to the local situation. When a local

district conducts a careful analysis of students' educational needs, attitudes of staff and students, available resources, and similar factors, it can plan and implement a program that is responsive to the local situation and therefore likely to meet its own goals.

Although Campbell-Thrane and others did not specify their models as being specifically for adult basic skill or ESL instruction, many vocational institutions seem to reflect two of these models, with a prevalence perhaps of the nonintegrated and combination models. The three vocational institutions included in this project's case studies demonstrate the use of both these models. Subject matter specialists instruct adults in the basic skills rather than vocational teachers, if the students' skill is very low. Students with some degree of basic skill competency, even if they are still having problems, have the chance to improve their knowledge of these skills while concurrently enrolled in vocational training.

At one site, the basic skill instruction is scheduled back to back with the vocational class. A basic skill coordinator serves as a liaison between the basic skill instructor and vocational instructor so that the basic skill lessons are appropriately timed for the vocational training activities.

At another site, developmental education is offered to students in vocational training. The developmental education department frequently conducts specific workshops at the request of vocational instructors, while also offering individual tutoring on an ongoing basis. Also at this site, the School of Continuing Education provides ABE, GED, and ESL instruction. Additionally, intensive short-term training in adult basic skills is available to dislocated workers or workers seeking a career change at the Job Training Institute.

At the third site, two models are again in operation. Subject matter specialists work with students in the first phase of basic skill training to bring students up to a minimum competency level for entering vocational training. While in training, the second phase for adults to improve their basic skills occurs concurrently. Vocational instructors provide input to curriculum developers who develop activities based on actual job tasks such as reading manuals.

Ashtabula County Joint Vocational School
Jefferson, Ohio

Ashtabula County JVS (ACJVS) is located in a rural area of northeastern Ohio. It serves 10 school districts: 9 in Ashtabula County and 1 in adjacent Geauga County. The faculty consists of 26 full-time and 100 to 200 part-time instructors who provided instruction to over 8,000 adults in 1983.

Vocational Programs

ACJVS provides full-time instructional programs in all five vocational areas, i.e., trade and industrial, health, agriculture, distributive education, and business and office. Programs include the following:

- Licensed Practical Nurse Education
- Food Service
- Cosmetology
- Electronic Computer Maintenance
- Industrial Electricity
- Drafting
- Machine Shop Trades
- Farm Business Planning and Analysis
- Small Business Management
- Diversified Industrial Training
- Intensive Office Training
- Information Processing

Additionally, 100 to 200 part-time instructional programs are offered. Examples of these programs are as follows:

- Beekeeping
- Accounting
- Basic Programming
- Office Machines
- Shorthand
- Candy Making
- Typing
- Microwave Cooking
- Stress Management
- Quilting
- Small Engine Repair
- Basic Welding
- Creative Writing
- Picture Framing
- Wood Carving
- Financial Planning

Determining Prerequisite Basic Skills for Vocational Programs

Although open enrollment into any vocational program is allowed, adults are encouraged to consider their proficiency in basic skills prior to enrollment to avoid difficulty in handling the course content. Two methods are used for determining prerequisite basic skills for entry into vocational programs. The first method is instructor opinion, whereby the instructor determines the basic skill levels needed for the successful completion of the program. The second method utilizes the basic skill instructor in cooperation with the vocational instructor to determine prerequisites based upon an analysis of the course content. The basic skill instructor uses a standard list of prevocational skills as a guide for identifying the prerequisites.

Assessment of Basic Skills

The assessment of basic skills is provided by the ACJVS Assessment Center. The center is a comprehensive testing and counseling service that also assesses other traits such as aptitudes, abilities, and interests. Although basic skill assessment is not required for all students, the staff encourage students to consider assessment if they feel there might be a deficiency. They have found that two-thirds of the adults who enter their vocational programs through JTPA are deficient in basic skills. The Test of Adult Basic Education (TABE), Form D is used to assess basic skills.

To improve student success in eight full-time vocational training programs, ACJVS has been experimenting with the use of selection criteria for the placement of students into programs. The selection process consists of approximately 22 hours of testing and test interpretation. A point system was developed that gives points for interest test match, achievement test (basic skills), work sample tests, client attitudes, attendance, and choice of training program. A follow-up of program success for 80 students (64 completors and 16 noncompletors) suggested the following conclusions: (1) a student should not be eliminated as a candidate for a training program if his or her scores fell below a certain level; (2) if supportive instructional aid is given to those students who fell below eighth grade reading and math levels, they can be successful in the program; (3) using the assessment total point system as a predictor of success in a training program is highly reliable (92.2 percent) accuracy. The investigators caution that these are preliminary findings and should be viewed as tentative at this time. They plan further studies to refine the selection process.

Adult Basic Skill and ESL Materials

Adults can receive basic skill training in three different ways at Ashtabula County JVS. Literacy training and refresher classes in reading and math are available at the prevocational level. ESL

needs are handled at the Kent State University branch in Ashtabula through one of the countywide ABE centers. In addition, a number of math classes are offered to students enrolled in certain courses in which math skills are of paramount importance, such as lab technician training. The math class and related vocational training are scheduled back to back. Perhaps reflecting the expertise of the ABE/VOED coordinator, the math basic skill program is more highly developed than that for reading. Plans are underway to research reading texts prior to expanding the reading basic skill program.

Several kinds of materials are used to teach math in the prevocational refresher class. In addition to print materials, Monroe Calculator's *Classmate 88* program and a TRS-80 computer provide supplementary aid.

The following print materials figure prominantly in learning activities:

- *Basic Essentials of Mathematics: Parts I and II* (Revised) by James T. Shea (Steck-Vaughn)
- *MATCH 5: Math Applied to Career Highlights* by Learning Achievement Corporation (Gregg Division of McGraw-Hill Book Company)
- *Vocational Math Series (Book 1), Fractions, Decimals & Percent: A Review* by David Wiltsie (Motivation Development)
- *Mathematics for Trade and Industrial Occupations* by William W. Rogers (Silver Burdett Company)
- *Mathematics for Careers: Fractions* edited by Jeanne De Orazio Brown (Delmar Publishers)
- *Electric Drill Series* by Jan Fair (Creative Publications)

All these print materials are softcover publications. *Basic Essentials of Mathematics* is a 96-page worktext that shows how to solve problems with whole numbers, fractions, and decimals, and then gives abundant, similar practice exercises to solve. *MATCH 5: Math Applied to Career Highlights* is a 128-page book of 2 parts. Part one links geometry skills to design and maintenance careers; part two links ratio, proportion, and graph reading to data careers. *Fractions, Decimals & Percent: A Review* is a 48-page booklet that provides a well-paced review text of the basic math skills required to work with fractions. *Mathematics for Trade and Industrial Occupations* is a fast-paced, 356-page textbook with a vocational thrust that provides examples, mechanical drawings, and problems relating to occupational tasks within trade and industry. Content ranges from basic whole number operations to trigonometry. Using a hand calculator is also covered.

Exemplary instructional materials. The last two of these print materials seem especially appropriate for teaching basic math to adults with severe problems. Each is slow paced and features a format quite unlike traditional math textbooks. In *Mathematics for Careers: Fractions*, white space is used well. Both easy-to-read print and large freestyle lettering are used, and graphics of a human hand provide helpful advance organizers. Sentences are short, and the number of exercises at any one time are unlikely to overpower even the fainthearted. The shiny cover won't soil easily and the paper is clear white. Hints, reminders, examples, shortcuts, and notes help gear the student's work for success. The uncrowded format varies in appealing ways from page to page, while also guiding the eye through steps of problems. Modern mathematics theory is presented without

complex terminology. "Try This" sections have students try a new process with immediate feedback. "Time Outs" apply mathematics to puzzles and games. Word problems come after a concept has been practiced with numbers alone.

The *Electric Drill Series* is also creatively formatted with a highly visual appeal. Four notebooks cover whole numbers, fractions, decimals, and percentages. The scope and sequence of tasks are meticulously laid out for the instructor. Worksheets are arranged in order of increasing difficulty so that students can skip particularly challenging ones if necessary. This series is designed for use as supplementary drill, skill maintenance, or diagnostic testing. As drill, it offers a breezy change of pace to liven up math study. Pretests and posttests are included for each notebook and several areas within. Worksheets are livened up by humorous cartoons appropriate to adults. Graphics may place problems within cells of honeycomb or ice blocks in an igloo. Trivia questions sometimes appear with the answers being solutions to certain problems in the exercise. Print is large and clear. The number of problems on a page is carefully limited. Shading makes up for the lack of color. The tone is warm with word problems sometimes asking the student to "please" do a given task. One can imagine an adult's dread of math being transformed by this avant-garde approach to learning.

A valuable network exists in Ashtabula County involving the basic skill program at the joint vocational school, a county ABE director, and other ABE centers. This organizational thrust has led to the development of a video series of nine tapes to teach math principles. Developed with state funds designated for special demonstration projects under Section 310 of the Adult Education Act, these 30-minute tapes are used at the joint vocational school as well on local cable television in continuous rotation for 9-week periods. These tapes have provided a bisensory approach to introducing math principles that motivates students to learn basic math skills.

As with math, several softcover print materials are used in the prevocational reading class. The following list represents a range of concerns:

- *Study Skills for Those Adults Returning to School* by Jerold W. Apps (McGraw-Hill Book Company)
- *Skillbooster Series: Getting the Main Idea* (Levels D, E, and F) by Alvin Kravitz and Dan Dramer (Modern Curriculum Press)
- *Writing: Sentences, Paragraphs & Composition* (Level F) by Alvin Granowsky and John Dawkins (Modern Curriculum Press)
- *Skillbooster Series: Building Reading Rate Speed with Comprehension* (newly revised) by Alvin Granowsky and Stephen Tompkins (Modern Curriculum Press)
- *High Action Reading for Study Skills* by Merrily P. Hansen and Kelly A. Crowley (Modern Curriculum Press)
- *Skills for Reading* by Olive Stafford Niles et al. (Scott, Foresman and Company)
- *Building Basic Skills in Writing*, Book 2 (Contemporary Books)
- *Building Basic Skills in Reading*, Book 2 (Contemporary Books)

The instructor takes a holistic view toward teaching reading skills. Although comprehension is the main thrust, she also deals with study skills. Some aspects that one might expect to find in a

composition course are included. What better way to help students understand the concepts of sentences and paragraphs, for example, than to use *Writing: Sentences, Paragraphs & Compositions*. Used as a refresher, this book is also a source of punctuation and capitalization skill training. Understanding punctuation and capitalization can contribute to reading with better understanding. The overall approach taken then is read, think, then write.

Exemplary instructional materials. One important skill emphasized is getting the main idea, which is reinforced by outlining. For this area of concern, the instructor relies on three levels of Modern Curriculum Press's well-conceived and attractively designed *Getting the Main Idea*. The level F booklet is 48 pages long and measures 9 1/4" by 7 1/2"—an atypical shape for instructional materials. The sturdy and shiny cover won't soil easily. The color blue is used to highlight titles, skill topics, and directions. The typeface is clear and unadorned; vocabulary words appear in bold print. Each 2-page lesson has an illustration, either photograph or drawing. Reading selections are varied and high interest, short, and well spaced between lines and paragraphs.

A nonthreatening number of questions follow each reading selection. The questioning approach varies from lesson to lesson. Different ways to recognize main ideas are covered by the lessons such as time lines, add-ons, summarizers and concluders, both-sides signals, signal words, problem-solution patterns, pointers, and cloze. Although not specifically aimed at adults, this text is well liked by the instructor for these reasons: it builds on an introduced concept, gives enough practice, and has a good variety of stories with adult appeal.

For several of the print materials, the instructor has just one copy available to use for resources. The main text, of which all students have a copy, is *Skills for Reading* (adult level). The instructor finds the vocabulary unit good and likes the manner in which the text tells different ways to find meaning. Approximately the same dimensions as *Getting the Main Idea* but thicker, this text of a little over 200 pages seems more advanced. The cover of this book is also shiny and sturdy to resist soiling. The following concepts covered in eight units of *Skills for Reading (C)* represent a range of reading skills: vocabulary (context, structure, pronunciation, and dictionary), flexibility, imagery, figurative language, inferences, central focus, judgments, and sentence meaning. Each unit closes with a review.

Skills chapters begin at an easy level to promote student confidence and gradually challenge students to encourage growth. Lessons deal with small, manageable chunks of learning. Progression within a skill area has a logical sequence that is easy to follow. The book moves from dealing with words in sentences to paragraphs and then to 2- or 3-page selections on different topics of adult appeal. A number of exercise questions allowing students to apply skills are nonthreatening. Perforated pages pose a convenience option of detaching pages for homework and grading. Lessons in each chapter range from three to seven. Graphically distinguishing the directions to the student might have clarified organization, but in general, formatting is appealing and varied.

Objectives are delineated in the teacher's edition for each workbook by skills area. Skills covered, such as drawing inferences, can apply to many content areas. Each lesson deals with one or more specific skill objectives. Most lessons use an inductive approach—often through visuals—to introduce concepts in a way that captures interest. These concepts are then broadened and developed by questions to involve students in the learning experience. Notes in the teacher's edition of the text enhance individualizing instruction.

Literacy training at Ashtabula County JVS and for ESL at the Kent State University branch uses the *Laubach Way to Reading* series of five readers and five skill books by New Reader's Press. This softcover series is highly structured and sequential and is noteworthy for its explicit directions to the instructor, having been designed for volunteer tutor use. Both reading and writing

skills are taught. A phonics approach introduces students to sound-symbol relationships through key words on charts. These same key words appear in context within a story that follows. There is review of previous material, dictation, writing practice, and homework in each lesson.

In the skillbooks, print is large and easy to read. Graphic effects include occasional drawings, colored ink, and shaded letters. Space for writing answers in the first skillbook is lined to guide first efforts at writing letters and words. Directions don't appear in the first book as students aren't ready to deal with them yet. In subsequent books in the series, directions appear in bold type. The cover is sturdy and shiny to resist soiling. The paper is white and of good quality. There is ample white space and both the amount of print on a page and the number of items per exercise are non-threatening. A brief, almost pocket-sized booklet accompanies each skillbook. Nicely formatted pages with ample line drawings give the student success experiences reading stories early in the learning stage. Reading difficulty is carefully measured with gradual increments.

One feature that the publisher considers an asset is that the basic lesson structure remains very much the same. To adults, this sameness may become boring, however. For variety, the literacy instructor supplements the *Laubach* series with a newsprint tabloid by Xerox Education Publications called *Know Your World Extra*. Similar to *Weekly Reader*, this 12-page paper has short articles on a range of topics to interest adults. Word games appear on the last page. Other supplements for more advanced readers are softcover books such as *The Fallen Angel and Other Stories* by Scholastic Book Services. This attractively formatted anthology offers four to five-page stories of high interest to young adults.

The Ashtabula County JVS ABE/VOED coordinator views the school's adult literacy program as very successful, but not without its problems. Students meet 2 days a week for 2 hours. Instructors might prefer to meet with students more frequently, but there is a frustration level in the students to be considered.

Because of the one-to-one teaching arrangement, attendance of the teacher and student has been a concern. There is a need to communicate when either one can't attend class. One doesn't want to disappoint a student who shows up for a cancelled class (transportation may have been a major effort) nor to pay the teacher who shows up needlessly for an empty classroom (literacy instructors are paid hourly rather than by salary). The solution at Ashtabula County JVS has been twofold. Administrators insist that students inform the school when they'll be absent; they also schedule literacy classes to ensure that another staff member can cover for an absent literacy instructor.

Summary of Linkage

The key to linkage of adult basic skills and vocational education at Ashtabula County JVS is in many respects the ABE/VOED coordinator. This person has expertise in both basic skills and vocational education and can serve as liaison for staff of the two areas. Adult basic skill instructors in many cases teach classes geared for a specific vocational training area such as medical laboratory technicians. In addition to formal linkage concurrent with training, more informal linkage as is feasible at the prevocational level occurs through the encouragement of the ABE/VOED coordinator.

Another aspect of the linkage at Ashtabula County JVS involves the cooperation between this school's administrators and the county ABE director. Resources, scheduling, and other mutual needs are often discussed and dealt with collaboratively.

Triton College
River Grove, Illinois

Triton College, or more formally, Illinois Community College District 504, encompasses 63 square miles in the western suburbs of Chicago, and includes approximately 320,000 residents. It serves 26 communities such as Bellwood, Elmwood Park, Harwood Heights, Maywood, Northlake, Oak Park, Riverside, Schiller Park, and Westchester. The mission of the college is to provide a comprehensive curriculum to meet the needs of the district for education and training. During the 1983-84 academic year, the college enrolled a total of 26,393 students; 5,950 were full-time and 20,443 were part-time. There were 226 full-time and 1,022 part-time faculty. The college offers both degree and certificate programs and nondegree courses. The degree and certificate programs extend up to 2 years of study leading to transfer to a 4-year university or to employment in a career area. Examples of degree and certificate programs are the following:

- Accounting and Business
- Architecture
- Journalism
- Nursing
- Photo Offset
- Welding
- Art Education
- Music
- Child Care
- Real Estate
- X-ray Technology

Examples of nondegree courses are these:

- Art Appreciation
- Ballet
- Blueprint Reading
- Electronics
- Typing
- Wills and Trusts
- Engine Repair
- Horticulture
- Study Techniques
- Yoga
- Modeling
- Word Processing

Determining Prerequisite Basic Skills for Vocational Programs

Triton College has an open-door admissions policy for high school graduates or others qualified to enter its programs. The admission requirements are set generally by the college. Additional requirements may be prescribed for a specific program. For example, health career programs require high school algebra, chemistry, and biology.

Assessment of Basic Skills

All full-time degree students are required to take basic skill placement tests. Nondegree students also are encouraged to take tests to determine their preparation for coursework. To assess basic skills, Triton recently adopted MESA, a microcomputer evaluation and screening assessment system produced by Valpar International. MESA is designed to test more than just basic skills. It provides a comparison of the individual to the requirements of a given class, training program, or job using a qualification profile. The profile is based upon the *Dictionary of Occupational Titles* and includes interests, temperament, physical capacities, aptitudes, and skills.

During the 1983-84 academic year, Triton estimated that approximately 60 percent of its incoming class seeking degrees or certificates were in need of special academic support services in order to succeed at the college.

Adult Basic Skill and ESL Materials

Adults can receive basic skill training in three different places at Triton College: through the department of developmental education under the School of Arts and Sciences, through the department of adult basic education under the School of Continuing Education, and at the Job Training Institute. Each will be described here.

The developmental education department offers assistance to full-time degree and certificate students who must have a high school diploma or GED equivalent, but need remediation to handle their coursework. Remediation is provided through scheduled workshops and by individual tutors primarily for math, reading, and writing. Most workshops are linked to specific vocational classes such as LPN so the vocational context is relevant. Although most of the instructional materials are commercially published, they are often supplemented with teacher-made materials. The most frequently used instructional materials are listed next. In the category of reading, seven items are used most:

- *Barnell Loft Specific Skills Series* (Barnell, Loft)
- *SRA Job Family Series* (Scientific Research Associates)
- *New Advanced Reading Skill Builder* with tapes (Reader's Digest)
- *Jack London and Sherlock Holmes Series* (Jamestown Publishers)
- *Vocabulary Series 1, 2, 3* (McGraw-Hill)
- *Reading for Meaning* by Coleman and Jungeblut (Lippincott Company)
- *Personal Achievement Reading Series* (Kirkwood Community College)

In the math category, primary use is made of the following three publications:

- *Arithmetic, Third Edition* by Barker, Rogers, and Van Dyke (Saunders College Publishing)
- *Elementary Algebra Text* by Alvin, Hackworth, and Howland (Prentice-Hall)
- *The Arithmetic of Drugs and Dosages* by Hart

For instruction in writing, Triton uses primarily these five items:

- *Steps in Composition, Third Edition* by Troyka and Nudelman (Prentice-Hall)
- *The Least You Should Know About English Sequence, A Basic Writing Course* by Stephens (Holt, Rinehart, and Winston)
- *The Process of Writing, Second Edition* by Van Nostrand, Knoblauch, and Pellegren (Houghton-Mifflin)
- *The Bank Street Writer* (Software package) (Scholastic)
- *Misused Words (And How to Use Them Correctly)* by Lawrence and Whitehurst (The Learning Seed)

The heart of the program is the intensive use of tutors, especially focusing on helping students with texts and materials from their vocational classes.

The School of Continuing Education provides adult basic education to low-skill level students who need assistance with ESL, GED, or specific courses in the nondegree and certificate programs. Due to the wide range of interests and literacy levels of the adults using this program, the school, through its Independent Learning Laboratory, has compiled a 52-page booklet of available instructional equipment and materials. The booklet lists numerous multimedia materials for ESL and GED preparation in such subjects as English, spelling, mathematics, science, study skills, and consumer education. Additionally, some of the ESL core materials are as follows:

- *Side by Side, Books 1A, 2A, 1B, and 2B* by Molinsky and Bliss (Prentice-Hall)
- *New Horizons I, II, and III* (Addison-Wesley Publishing Company)
- *Life Skills Workbooks I and II*
- *Modern American English I and II*
- *A New Approach for the 21st Century*
- *American English*
- *Encounters*
- *English Sentence Structures*
- *Mastering American English*
- *Developing Reading Skills*
- *A Conversation Book*
- *Read On, Speak Out*
- *The Non-Stop Discussion Workbook*
- *Contract USA*
- *Basic Idioms in American English*
- *Essential Idioms in English*

A series of ESL courses is offered starting with beginning ESL and progressing through higher levels such as ESL I-V. To standardize the instruction across several ESL centers, a curriculum guide has been developed. It determines course content for six levels of instruction and provides for development of four basic language skills: listening, speaking, reading, and writing. Each level of instruction consists of three components: practical life competencies, structures, and communication skills. Materials used at Triton for GED preparation of ESL students are these:

- *From Pictures to Passages* by Evanson (Contemporary Books)
- *Working with Numbers* by Shea (Steck-Vaughn)
- *GED Scorebooster 2* by Jacobs (Steck-Vaughn)
- *The Cambridge Program for the High School Equivalency Examination* by Shapiro, Cohen, Murray, Perutti, Mayo, and Hendler (Cambridge)
- *GED, How to Prepare for the High School Equivalency Examination, Test 5, The Mathematics Test* by Howett (Contemporary Books)

Triton helps 800 to 1,000 students per semester with low-level basic skills prepare for the GED. Their main concern is to establish a supportive learning environment that treats each student as an individual. They encourage students to set their own goals and take responsibility for learning. They use a variety of strategies to help the adult progress and build confidence such as small groups, tutoring, support services, building success experiences, peer teaching, minilectures, and audiovisual-multisensory techniques.

The Job Training Institute was established in 1980. Its purpose is to provide short-term training for dislocated workers or those who are currently employed but want different jobs. Fifty percent of the adults are dislocated workers. They represent a wide range of levels of work experience, skills, and academic background. Assessment of their basic skills and aptitudes varies with the occupation they want to enter, such as account clerk, nursing assistant, copy machine repairer, burglar alarm installer, and locksmith. If they need assistance with basic skills, they are referred to the school of Continuing Education program or the Learning Assistance Center.

Exemplary instructional materials. *Side by Side*, a series of softcover, student workbooks with detailed teacher guides, seems especially effective for teaching ESL. The goal of *Side by Side* is to help ESL students learn to use English gramatically through practice with meaningful conversational exchanges. All exercises are designed so that students will speak to and interact with each other. Each chapter of the workbooks covers one or more specific grammatical structures for the student to learn. These structures are taught through a variety of techniques such as "model guided conversation" exercises, "on you own" activities (role playing, interviews, and extended conversations), and classroom dramas. *Side by Side* also includes ancillary student materials—activity workbooks, audiocassette tapes, dialogue visual cards, and vocabulary picture cards.

The *Side by Side* teacher's guide is carefully structured and coordinated with the student workbooks to optimize teaching. It offers a number of practical instructional techniques that expand the core instruction, e.g., techniques for pairing students for practice conversations.

The student workbooks are attractively illustrated, humorous, and logically sequenced. The context of the practice exercises reflects common experiences that are useful for daily living such as using the telephone, shopping, cooking, and travel. There is sufficient space to write-in answers and add corrections, if necessary.

Summary of Linkage

The various departments offering basic skill instruction at Triton College work cooperatively with the vocational training programs to insure basic skill remediation for their students. In most instances concurrent with training, the basic skill instruction is specifically targeted for vocational students through the extensive use of workshops and tutors.

Salt Lake Skills Center
Salt Lake City, Utah

The Salt Lake Skills Center provides short-term, intensive vocational training for the economically and educationally disadvantaged to meet the needs of industry. Training lasts from 8 weeks to 9 months and is open entry/open exit. Students are sponsored by community organizations or state and federal agencies. Skills center support services include an assessment center, a job placement office, and vocational counseling.

The skills center serves over 45 community-based organizations, special interest groups, alternative programs, school districts, agencies, and institutions.

The skills center begins programs at 7:30 a.m. and is in operation until 11:00 p.m. Most programs meet for 6 hours per day and run at least 2 sections during the day.

Vocational Programs

Students attending the skills center are generally referred by an agency or a school district and are in need of intensive vocational training in order to obtain a job as quickly as possible. All programs are competency based and operate with open enrollment 12 months a year. Skill center programs include training in the following areas:

- Accounting
- Auto Body
- Auto Parts Sales and Exhaust Specialty
- CAI Basic Literacy
- Child Care Attendant
- Clerk Typist
- Computer Literacy
- Drafting
- Electronic Assembly
- Electronic Test Technician
- Engine Rebuild
- English as a Second Language
- Front End and Brake Specialty
- Graphic Arts
- Home Health Aide
- Information Processing
- Lubrication and Tire Specialty
- Machinist
- Microcomputer Repair Technician
- Nurse's Aide
- Occupational Basic Skills
- Office Occupations
- Professional Driving
- Secretarial
- The Seminars
- Welding
- Women's Seminars

During the 1982-83 school year, the skill center reports that more than 7,000 individuals were seen by the admissions counselors, over 5,400 more were tested in the assessment center, and 3,111 were enrolled. Average monthly enrollment was 715. The skills center had a 74 percent completion rate that year and placed 69 percent of its students. The student profile at the skills center consists of 39 percent non-high school diplomas, 34 percent minorities, 48 percent women, and 57 percent welfare recipients.

Determining Prerequisite Basic Skills for Vocational Programs

The vocational instructor in cooperation with an adult basic education instructor determines the minimum competency levels in math and reading, necessary for success in the vocational program. Additional entry requirements might also be designated for a specific program (e.g., the

need for a driver's license or the capacity for color vision). Minimal levels for math and reading vary for each program with the lowest being fourth grade.

Assessment of Basic Skills

Assessment of basic skills is accomplished by the Career Assessment Center at the skills center. The Career Assessment Center is designed to determine the student's academic level, personality traits, and vocational interests and aptitudes in order to help the student make the best possible vocational choice. At present, the assessment center is using the Gates-MacGinite Reading Test for reading and the Wide-Range Achievement Test (WRAT) for math. They also are considering use of the Adult Basic Learning Exam (ABLE). Additionally, they are using work sample tests for approximately 58 occupations such as machinist, tile setter, carpenter, welder, glazier, typist, and bookkeeper.

Adult Basic Skill and ESL Materials

As an institution, Salt Lake Skills Center is firmly dedicated to the development of adult basic education and vocational instruction. This dedication is manifest in a two-phase approach to achieving the linkage between basic education and vocational education to enhance students' successful entry and progression through training. The first phase focuses on basic skill needs from zero skills up to a level permitting entry into vocational training. The second phase has competency-based goals for linking training with concurrent basic skill improvement.

A pilot project was started in 1982 to use computer-assisted instruction to provide remedial basic skills in reading and mathematics for students unable to meet minimum entry levels of vocational training areas. Students in the pilot had at least a 3.5 reading level since Control Data's *PLATO Basic Skills Learning System* is geared for that level. Since completion of the pilot, the staff has added several additional components to the tutorial, individualized adult basic reading thrust. One of these components is *Learning System 100* by EDL-McGraw Hill (now Arista). These additions enabled staff to build on the computer-assisted portion of the instruction. Some of the additional areas of instruction include listening, writing, spelling, phonics, and additional word attack and comprehension skills. Now the first phase program provides remediation to adults functioning from 0.0 to 3.5 level as well as 3.5 on up.

Exemplary instructional materials. The *PLATO Basic Skills Learning System* is, according to the publisher, "a complete, comprehensive, and self-contained instructional curriculum." Its purpose is to help persons advance from third-grade equivalency to eighth-grade equivalency in reading, language, and mathematics skills. The target population is a wide variety of people. Originally intended for out-of-school young adults 16 to 24 who had less than a high school education, the system is considered by the publisher to be appropriate for all of the following:

- Secondary school remedial students
- Urban dropouts and unemployed
- Incarcerated individuals
- Armed Forces recruits

- ABE students
- Equal Opportunity Act program participants
- Vocational-technical institute students

Interaction with the PLATO terminal is central to this learning system. The computer generates all tests, study prescriptions, and most learning activities. A set of strand booklets supplements each of the three skill areas. The program is totally individualized and offers the student frequent, immediate feedback based on the individual responses to questions or tasks appearing on the computer screen. The system is visual and tactile. Students have the options usually of using the keyboard or pressing the number or box of a choice on the screen. Lessons reflect small, well-defined units rather than large chunks of instruction. Students work on developing competencies spelled out in objectives. They progress from simple to complex tasks within a skill area, or strand. Students measure their own success and progress. Based on the principle of mastery learning, students must meet mastery criteria on one objective before progressing to the next.

Directions on the screen and a clearly marked keyboard make PLATO easy to use. The touch feature eliminates the need for much keyboard skill. The system builds in a choice of tasks such as review or reinforcement and allows students to learn at their own pace. Fear of failure is minimized. The one-to-one interaction with the computer creates a tutorial environment. Occasionally the computer even "calls" the student by name.

The instructional strategies are well conceived. The computer presents a new skill in a tutorial lesson that offers the option of brief review. Students practice each new skill in a guided practice section on the screen and as desired in the booklet. Periodic mixed practice and application activities ensure retention. Inventory testing places the student in the most appropriate level of the strand. Students have some freedom to make choices within the tight structure. The router control makes available the most appropriate cluster within a strand. The student control allows the student to determine which strand and which type of instructional activity to address next. The student flow is—

- tutorial (concept explanation, demonstration, explanation or inquiry, student assessment, branching, feedback);
- guided practice;
- review or offline activity, drill and practice, or progress check;
- mixed practice;
- offline application or retention test.

One advantage of the computer lies in its capacity for data collection. Individual, group, and course data are available. The instructor can find out how much time was spent on lessons. A student's profile map and individual records are compiled. Group data available include average scores and times as well as standard deviations.

Miniature cartoon figures and flashing arrows animate the screen by pointing out things to the student. An array of graphics clarifies problems. Often the screen fills up gradually as students progress through steps of a problem. Sometimes it is possible to rewrite a page by pressing the

back key. The shift-back key is used to obtain a short review. Feedback responses are very conversational and vary in degree of emphasis appropriate to the effort required for mastery (e.g., "good" to "fantastic"). The number of exercises depends on how many mistakes the student makes. The computer expresses patience as well as an explanation when errors occur in solving problems, thus enhancing the self-paced learning process. The size of the computer screen limits the material shown at one time to a nonthreatening amount.

The math curriculum has these nine strands:

- Basic number ideas
- Addition
- Subtraction
- Multiplication
- Division
- Fractions
- Decimals
- Ratio, proportion, and percent
- Geometry and measurement

These strands are divided into bundles, where retention is checked, and in turn into lesson clusters. The basic number ideas strand, for example, has two bundles: number 0-9 and numbers 10-1000. The clusters of each bundle are as follows:

Numbers 0-9

1. Whole numbers 0-9
2. Counting 0-9

Numbers 10-1000

3. Whole numbers 10-99
4. Whole numbers 100-1000
5. Basic numbers concepts

Four books accompany these lessons on the computer.

The reading curriculum has five strands:

- Making new words
- Understanding new words
- Understanding what you read
- Thinking about what you read
- Judging what you read

The bundles and clusters of the second strand, for example, are as follows:

Selecting the Proper Words

1. Predicting words
2. Comparatives
3. Prepositions (*on, at, in*)
4. Pronouns (*I, me, my, mine, we, us, you*)
5. More pronouns

Choosing the Proper Words

6. Homographs
7. Homonyms and homophones
8. More prepositions
9. Identifying groups
10. Context use of words

Dealing with Confusing Words

11. Synonyms
12. More word grouping
13. Specific meaning in context
14. Homonyms and homophones

Word Meanings

15. Antonyms
16. Meanings of new words
17. Cause and effect words
18. Context word meanings

Applying New Words

19. Context homonyms and homophones
20. New word clues
21. Idioms

Understanding and Using New Words

22. Homographs
23. Complicated word meaning
24. More idioms

There is a student manual for each strand in the reading curriculum.

The student manuals contain both practice and review exercises geared for specific clusters. The number of exercises on a page is nonthreatening and gradually increases in the exercises for each cluster. Examples provide exercise items for the student to do. A variety of question formats are included. The typeface is clear and unadorned. Ample white space appears on the pages, but no graphic effects are given other than boxing, italics, and bold type for emphasis. The reading level is carefully controlled here as in the computer material.

Learning 100 is a multimedia basic skill system that integrates learning to read with other communication skills in listening, speaking, and writing. The materials, which are intended for underachieving, undereducated, and/or learning-disabled high school students and adults, assumes that many adults have perceptual problems. Media include a controlled reader (tachistoscope) and cassette player. The multilevel structure of the system allows students to begin at their own skill level and progress at their own pace. The levels of the print materials are as follows:

Code	Reading Level
AA	1.5 - 2.5
BA	2.0 - 3.5
CA	3.0 - 4.5
DA	4.0 - 5.5
EA	5.0 - 6.5
FA	6.0 - 7.5

The system, first released in 1965, has recently been revised to simplify its structure, organization, and management. The materials feature a core vocabulary graded by reading level, coverage of all reading skills needed to pass the new GED exam, orientation to adult interests, individualized activities, and student-teacher interaction.

Organization of the materials is in cycles of four stages: preparation, skill building, reinforcement, and application. There are 30 cycles per level AA-CA and 20 cycles per level DA-FA. Each cycle requires three to five class periods. Table 1 shows the stages and related print programs for all levels.

The *preparation* stage involves diagnosing student needs, prescribing instruction, and training students in visual skills. The *PAVE* Program gives students 2- to 5-minute exercises to prepare students for reading through tachistoscopic and controlled reading techniques. The *skill-building* stage takes students through a carefully controlled sequence of learning experiences to improve these key skills: word attack, vocabulary, reading, spelling, and listening. The word attack and vocabulary programs use sound filmstrips to help students learn words by seeing and hearing them used in context. The *Language Clues Program* helps students master new words through sight, sound, meaning, and usage. Again, tachistoscopic exercises are used along with a variety of sentence-based exercises. Comprehension and fluency are stressed through additional tachistoscopic exercises that flash stories on a screen at a fast rate, one word to a line to hold student attention and prevent subvocalizing. The *Reading Strategies Program* uses narrated audiocassettes, study guides, and controlled reading activities to improve comprehension, fluency, and silent reading skills.

The *reinforcement* stage provides motivational follow-up activities for the vocabulary learned in the *Language Clues Program*. Written communication and perception are also stressed. Word games and puzzles reinforce vocabulary and spelling. In the application stage, students apply what they've learned in a series of independent activities that reinforce reading silently; writing sentences and paragraphs; reading science, social studies and reference materials; and using study skills. The *AWARE Program* provides individualized cassette-guided lessons relating all basic skills to performance of essential life tasks such as voting, shopping, and getting a job.

A closer look at the format of some of the print materials shows a number of ways print and audiovisual materials can be combined. The *EDL Reading Strategies* study guides cue the reader when to start the cassette player for controlled reading. Preview steps before beginning a reading exercise appear numbered in a box above a photo or illustration germane to the story's topic. In the comprehension check exercise, item numbers are coded by a triangle for thought questions and a circle for a main-idea question. Directions are very concise. Exercise items of a nonthreatening number have varied formats. Vocabulary words appear in bold type. Given the large-sized pages (8 1/2" x 11"), two columns of print make the stories easier to read. Typeface is clear, and lines and paragraphs are well spaced. The cover is shiny and sturdy to resist soiling.

TABLE 1

THE LEARNING 100 SYSTEM

Stage	Programs for AA-CA	Programs for DA-FA
Preparation -placement & prescription	Entry-level guides, language clues and Reading Strategies tests	Entry-level guides, language clues and Reading Strategies tests
-perceptual accuracy & visual efficiency	*PAVE A-F*	*PAVE A-F*
Skill building -word attack	*Learning 100 Vocabulary & Word Attack Series*	*Basic and Advanced Word Attack*
-vocabulary & language	*Language Clues*	*Language Clues*
-comprehension & fluency	*Processing Training*	*Processing & Prediction*
	Reading Strategies	*Reading Strategies*
Reinforcement	*WRITE ON* books	*WRITE ON* books
	Flash-X Discs	Flash-X Discs
		Listen DA
		Listen & Read EA
		Listen & Write FA
Application -independent reading	*GO* (1, 2, & 3)	*GO* (4, 5, & 6)
-writing, grammar & usage	WRITE ON books	*Write and Read*
-content area reading		*Study Skills*
-life & competency	*AWARE I & II*	*AWARE III*
		PAIR

Learning 100's Write and Read Series of workbooks teach grammar, mechanics, and usage. Shading in different tones of colored ink sets off practice exercises and important rules to remember. Bold print sets off words in explanatory sections. Graphic borders adorn areas of blank space. Comments in cartoon bubbles provide advance organizers and summary reinforcement. Exercises are kept at a nonthreatening number, and students can opt to do more practice if needed. The quality of the cover is like that of *Reading Strategies*, and the paper is clear white.

The *Language Clues Series* has a sequential organization; in each lesson a section of four parts focuses on vocabulary and language skills. Each lesson ends in a section on spelling that progresses from a trial test to practice, then test and review. A model box precedes exercises synched with the tachistoscope. Exercises are of a reasonable number, except for review pages perhaps. There are no illustrations, but a moderate amount of white space adds appeal. The format of exercise questions is varied and efficiently designed to appear almost like word games.

The second phase of Salt Lake Skills Center's adult basic skills program occurs during vocational training. Adults receive 6 hours a day of vocational training and 1 hour of supportive basic skills instruction. The program is structured in a competency-based fashion.

For sources of commercial and noncommercial instructional materials to use in this second phase, instructors especially rely on five resource books that deal with linking basic skills to occupational tasks and vocational training. These books are as follows:

- *Linking Basic Skills to Entry-Level Auto Mechanic & Auto Body Worker Tasks*
- *Linking Basic Skills to Occupational Tasks & Vocational Training: Entry-level Clerk-typist*
- *Linking Basic Skills to Entry-level Electronic Test Technician Tasks*
- *Linking Basic Skills to Entry-level Retail Salesperson Tasks*
- *Linking Basic Skills to Occupational Tasks & Vocational Training: Entry-level Welder*

All five books were developed by Salt Lake Skills Center. Each book identifies for a given vocational program occupationally specific and general instructional materials to teach job-related mathematics, writing, reading, listening, and speaking. These books are the results of studies done in response to a need expressed by vocational administrators and educators for more detailed information concerning the basic skills needed to perform occupational tasks. The books also contain entry-level skills lists compiled through a modified DACUM (**D**eveloping **A** **C**urriculu**m**) occupational analysis as well as a list of assessment tools

In addition to these resource books, the second phase uses occupationally related materials such as manuals, tables, and assembly instructions to promote vocational reading skill. Instructors have developed activities and modules for further linkage.

The only information about ESL materials used at Salt Lake Skills Center is three lists of titles used. Apparently, teaching is done at four levels of proficiency. A compilation of the lists appears in table 2.

TABLE 2

ESL INSTRUCTIONAL MATERIALS
SALT LAKE SKILLS CENTER

	SPEAKING	READING	GRAMMAR
Level 1	*Bridges to English, 1* *English Sounds and Spelling* *American Ker[illegible]l Lessons, 1*	*Read English, 1* *Write English, 1* *Elementary Comp. Practice, 1* *Coming to America* *Side by Side* (health unit only) *Looking at American Signs* *No Hot Water Tonight*	*Practical English, I* *Writing Practical English* *Contact English* *Tests and Drills in English* (Dixon)
Level 2	*Non-Stop Discussion Workbook Idioms* (Reeves) *Improving Aural Com. & Listening Dictation* (Morley) *Getting Along in English* *Pronunciation Drills*	*Highlights of American History* (books 1 and 2) *Using the Want Ads* *My Job Application File* *Measure Up* *Solving Problems in Occupational Knowledge* *English for a Changing World* *Time and Space, A Basic Reader* newspaper articles short passages	*English Alive* (Fingado) *Changing Times/Changing Tenses*
Level 3	*It's All in a Day's Work* *Listening Contours* *Improving Aural Comprehension* *Pronunciation Contrasts* *Listening In-Speaking Out* *Alice Blows a Fuse* *Nonstop Discussion Workbook* *Getting Along in English* *Pronunciation Drills* *It's Up to You* (Dresser) *Listening in the Real World* games and music	*Life Skills Through Reading* (Mullins) *Contact USA* *Utah Survival* *Little Stories for Big People* *Perspectives* *O, Promised Land* (Dennis)	*Using English, Your Second Language* (Danielson, Hayden) *Two Word Verbs in English* *Understanding and Using Grammar* (Azar) *ESL Grammar Workbook, I & II* (Dart) *Graded Exercises in English*
Level 4	*Non-Stop Discussion Workbook Idioms* (Reeves) *Improving Aural Comprehension* *Listening Dictation* *Pronunciation* (Nilson, Nilson) *It's Up to You* *Listening Contours* (Rost) *Listening Focus* (Kisslinger) *Pronunciation Contrasts*	*Developing Reading Skills* *Basic Science for Living* *Real-Life Reading Skills* *Basic Science for Living* newspaper and magazine articles	*Structures in Context* *ESL Grammar Workbook, II* *Understanding and Using English Grammar* (Azar)

Summary of Linkage

At the present time, staff plan to develop vocationally linked skills activities for each vocational class. These activities will allow students as they approach the entry levels of their chosen training area to make the transition from basic skills to vocational training in a smoother manner. Staff also want to increase vocationally related reading classes that students take concurrently with their vocational training. At this time the skills center has one class in auto mechanics that aids and supports students working on vocationally specific skills required for auto mechanics.

As with the sites in the other case studies, the emphasis upon linkage of adult basic skills vocational education at Salt Lake Skills Center occurs during vocational training. Features that distinguish linkage at Salt Lake Skills Center are the concern for transition from low-level basic skills to vocational training and the use of *realia* to promote vocational reading skill. Additionally, Salt Lake Skills Center has systematically tried to develop this linkage based on specific occupational and basic skills analyses.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

This chapter outlines a series of conclusions expressed as problems, followed by recommendations for practice, research, and policy to strengthen the link between basic skills instruction and vocational training. The conclusions and recommendations represent a synthesis of information from the project's panel of experts, the professional literature, field visits, conferences, project reports, correspondence from the field, and publishers of instructional materials, as well as observations of project staff.

For Practitioners

- **Problem 1**—The current program structure of adult basic education (ABE) inhibits responsiveness to trends in modifying instructional design toward job-related curriculum.

- **Recommendations**—Local education agencies should—

  — Provide staff development and inservice teacher training to foster linkage through the collaborative development of assessment and instruction that integrates basic skills and vocational training.

  — Reward ABE for basic skill competencies attained by students.

  — Examine alternative ABE delivery methods.

  — Stress the relevance of basic skills as part of career counseling for adults as they consider career options.

- **Problem 2**—The ABE population has been motivated to obtain GED high school equivalency diplomas without necessarily recognizing other goals such as the acquisition of functional competencies for work and daily living.

- **Recommendations**

  — Focus ABE to generic adult education problems in which the basics, developmental skills, and GED can be taught in a larger context (goal-oriented adult learning).

  — Focus public attention on adult literacy and functional competencies: GED is only one route to competence.

  -- Publicize the need for functional competencies in preparation for vocational training and work.

- **Problem 3**—The link between adult basic education (ABE) and vocational education has been weak or absent.

- **Recommendations**

  - Establish articulation efforts at the state and local levels to increase basic skill development for vocational preparation.
  - Award Job Training Partnership Act (JTPA) funds for projects that demonstrate relationships between ABE and vocational education.
  - Establish model demonstration projects that illustrate the link between adult basic education (ABE) and vocational education.

- **Problem 4**—Commercial ABE and ESL instructional materials often do not satisfy the selection criteria advocated by ABE and ESL experts.

- **Recommendations**

  - Provide training on the selection criteria for instructional materials to novice basic skill instructors.
  - Encourage ABE and ESL coordinators to communicate with publishers about the selection criteria to improve the quality of materials.

For Researchers

- **Problem**—There is no comprehensive research agenda for the studying the relationship of adult basic education and vocational education. The following are suggested parameters of the research agenda.

- **Recommendations**

  - Conduct systematic research of the basic skills that are necessary for life skills and occupational needs for ABE populations.

Scope and social implications of the basic skill problem.

  - Determine the levels of basic skills in the country that currently exist.
  - Identify the social and economic needs of the ABE populations.

Research on the learner.

  - Develop principles and theories that are unique to ABE populations. For example, it is unclear as to how low a basic skill level it is feasible and desirable to integrate a vocational education context with basic skill instruction.

Research on the delivery system.

  - Identify and assess alternative delivery systems to determine promising practices.

Research on assessment.

  - Increase the diagnostic information provided by basic skill assessment instruments so that the information guides basic skill instruction.

— Develop strategies to improve basic skill assessment through the collaboration of vocational counselors, basic skill and vocational teachers.

Research on instructional materials.

— Develop basic skill instructional materials that are relevant to the context of vocational training in order to foster meaningful transfer of learning.

For Policymakers

- **Problem**—There are weaknesses in regard to the current federal and state policies for formulating criteria and the allocation of funds for illiterate adults who need vocational training.

- **Recommendations**—Federal and state policy for funding should accomplish the following:

  — Use performance, for example, competency attainment, as the criterion for funding adult training programs.

  — Define more clearly what is meant by "those most in need" (Federal Adult Education Act) and fund on these criteria.

  — Aim programs at those "most in need." (Eliminate secondary funds in ABE and concentrate efforts on "most in need." The result would be more expensive ABE and fewer numbers, but a better focus for monies.)

  — Have each state develop criteria for funding that include how goals and programs will prepare functionally illiterate adults for job training.

  — In addition to public schools, encourage more diverse groups to offer ABE.

  — Federal and state agencies should develop some system for defining "dire need" cases to support the delivery of ABE and vocational education training to those who should be provided cost of living subsidies.

  — Federal and state agencies should develop a mechanism for allowing illiterates working on basic skills in preparation for a job training program to get unemployment benefits.

  — Consideration should be given to changing the Federal Adult Education Act formula for funding to distribute financial suport based on the degree of illiteracy of adults and their lack of job skills. For example, those with skills at the 0-4 grade levels would receive the highest funding levels, 5-8 grade levels medium funding levels, and 9-12 grade levels the lowest level of formula funding or none.

  — Funds should be set aside in JTPA service delivery areas to serve functionally illiterate adults. Again, distribution could be on a skill level basis. For example, 0-4 level—first priority, 5-8 level—second, and 9-12 level—last priority.

  — The U.S. Census Bureau should revise the 1990 census questionnaire to include specific questions on educational attainment of all populations over 16.

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